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NEWSLETTER IN CENTER FOLD

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Technical Reports

September 1950

SURVEY OF FOOD AND NUTRITION RESEARCH IN THE U.S., 1948-1949

FOOD AND NUTRITION BOARD NATIONAL RESEARCH COUNCIL

The Second Survey of Food and Nutrition Research in the United States, just published, includes a subject listing of 4477 research projects sponsored by 659 organizations and directed by some 5600 professional personnel. The volume covers research active during 1948-1949.

This second edition records a repetition of the survey conducted and published by the Food and Nutrition Board of the National Research Council in August 1948, covering research active in 1947.

As in the first edition, the content includes a listing of active food and nutrition research projects classified by subject, a listing of academic, governmental, and industrial organizations conducting or supporting the research, and a listing of professional personnel responsible for the research.

Of the 4477 projects listed in the second survey, 63 per cent were new in the sense of having been activated since the 1947 survey, and 37 per cent were projects reported as continued active. The number of projects listed in the first survey was 4086. There was not much change in the distributional pattern of the projects among the classification categories. The following tabulation indicates the pattern.

Distribution of Food and Nutrition Research Projects as to Subject

	1947	1949
Total number of projects	4086	4477
Percentage distribution		
Physiology	42.0	42.8
Chemistry	31.4	30.8
Technology	15.8	17.4
Microbiology	6.5	7.4
Food Acceptance	1.4	0.8
Nutrition Education	2.8	0.6

The number of organizations reporting research increased from 606 in the first survey to 659 in the second. Actually, 220 new organizations are included in the second because some of those listed in the first had not reported a continuation of their research program. As in the first survey, approximately 50 per cent numerically of the research organizations could be classified as industrial, 40 per cent as academic, and 10 per cent as governmental. This does not necessarily reflect the distribution of the volume of research.

The primary objective of the survey is to furnish guidance for those involved in food or nutrition research as to what research is going on, who is doing it, and where it is being done. The projects listed are not a guide to published results but may serve to provide those interested in special subjects with a correspondence direction to coordinated effort which may save needless repetition and wastage of research manpower and facilities.

— LeRoy Voris

Editor's Note

Projects are classified under the following fields and groups:

PHYSIOLOGY--Nutritional requirements, feeding farm animals, digestion, metabolism, tissue biochemistry, deficiency symptoms and pathology, nutrition in disease, nutrition surveys.

CHEMISTRY--Chemistry of nutrients, chemistry of enzymes, chemistry of hormones; food composition and nutritive value; change in composition; enrichment of foods; added chemicals and preservatives.

TECHNOLOGY--Equipment and methods; development of products (general); processes for preserving foods.

MICROBIOLOGY--Nutrition of microorganisms and biological assays; intestinal microorganisms; microbiology in food production (yeasts and fermentation); food spoilage and prevention; bactericides for good processing plants.

FOOD ACCEPTANCE.

NUTRITION EDUCATION.

Survey of Food and Nutrition Research in the United States, 1948-1949, sells for $1.75. Orders should be addressed to the Office of Technical Services of the U. S. Department of Commerce, accompained by check or money order payable to the Treasurer of the United States.

Drugs and Pharmaceuticals

MONTHLY REPORTS OF THE PHARMACEUTICAL INDUSTRIAL LABORATORY, JAN-SEP 1946. I. G. Farbenindustrie A. G., Elberfeld, Ger. 1946. 65f (Text in German) Mi $3.00, Enl Pr $10.00. PB 110382
1. Chemical research - Germany 2. Pharmaceuticals - Research - Germany 3. Micro BIOS FD 3514/47, Frames 1-62.
Abstract available as PB 110382s. 2p. Mi $1.25, Ph $1.25.

MONTHLY REPORTS OF THE PHARMACEUTICAL SCIENTIFIC LABORATORY, FEB-SEP 1946. I. G. Farbenindustrie A. G., Elberfeld, Ger. 1946. 190f (Text in German) Mi $6.75, Enl Pr $25.00. PB 110380
1. Chemical research - Germany 2. Pharmaceuticals - Research - Germany 3. Micro BIOS FD 3515/47, Frames 71-250.
Abstract available as PB 110380s. 2p. Mi $1.25, Ph $1.25.

SOME PHARMACEUTICAL TARGETS IN GERMANY, REPORTED by Schrab M. Mistry. British Intelligence Objectives Subcommittee. 1946. 319f (Text in German and English) Mi $9.00, Enl Pr $42.50. PB 110383
1. Pharmaceuticals - Research - Germany 2. Micro BIOS FD 2728/49, Frames 1-313.
Abstract available as PB 110383s. 1p. Mi $1.25, Ph $1.25.

Detergents

SOAP OF SYNTHETIC FATTY ACIDS AND MERSOLATES. COMPARISON WITH SOAP OF NATURAL FATTY ACIDS. MEASURING METHODS FOR DETERGENTS. REPORTED BY E. HUSTINX, DR. A. BROEK, DR. P. DOBBELMAN. NETHERLANDS MILITARY MISSION. TECHNICAL RESEARCH. FIAT TRIP NO. 3377; BIOS TRIP NO. 3196. Mar-May 1947. 36f diagrs, graphs (Text in German) Mi $2.25, Enl Pr $6.25. PB 101011
1. Soaps - Manufacture - Germany 2. Fatty acids, Synthetic - Production - Germany 3. Mersolat D (Trade name) 4. Mersolat H (Trade name) 5. Mersolat 30 (Trade name) 6. Detergents, Synthetic - Evaluation - Germany 7. TOR 62 8. Micro BIOS FD 3280/48, Frames 1-32.
Abstract available as PB 101011s. 2p. Mi $1.25, Ph $1.25. Supplementary to BIOS and FIAT reports listed in abstract.

Agricultural Chemicals

CHEMICAL STUDIES ON FUNGICIDES. PART VIII. SYNTHESIS OF α, α-DICHLOROACETAMIDES, by Warren E. Weaver and Albert D. Swensen. U. S. Naval Research Laboratory. Mar 1950. 8p tables Available from Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 110326
As part of a systematic investigation of the fungicidal activity of the α-halo amides, the synthesis of α, α-dichloroacetamides was undertaken. Twenty-four of these

compounds were synthesized and their properties ascertained. Twenty-one of the compounds are new and have not been described previously in the literature. It was definitely established that α,α-dichloroacetamides are not as fungicidal as α-bromoacetamides. NRL R 3632.

PEST CONTROL, REPRINTED PUBLICATIONS AND A REPORT BY H. THIEM ON "SUCCESSFUL EXPERIMENTS FOR COMBATING WIRE WORMS AND LARVAE ON CULTIVATED PLANTS." Germany. Biologische Reichsanstalt für Land- und Forstwirtschaft. 1937-1944. 76f photos, drawings, graph, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110384
1. Insecticides - Germany 2. Pest control - Germany 3. Micro BIOS FD 4749/47, Frames 1-74.
Abstract available as PB 110384s. 2p. Mi $1.25, Ph $1.25.

Plastics and Plasticizers

POLYMERISATION OF VINYL CHLORIDE, AND RELATED SUBJECTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1944. 108f photos, drawings, graphs, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 110411
1. Vinyl chloride - Polymerization - Germany 2. Plastics - Drying - Germany 3. Plastics - Specifications - Germany 4. Nubilosa plant 5. Acetylene - Removal from vinyl chloride - Germany 6. Micro BIOS FD 2286/47, Frames 1-103.
English abstract included.

Paints, Varnishes and Lacquers

PAINT INDUSTRY IN GERMANY DURING THE PERIOD 1939-1945, by Neil R. Fisk and H. W. Bowron. British Intelligence Objectives Sub-Committee. 1950. 154p photos, drawings, diagrs Available from the U. S. Department of Commerce, Cffice of Technical Services, Washington 25, D. C. Mimeo: $.75. PB 110322
1. Paints - Manufacture - Germany 2. BIOS OR 22.

SUITABILITY OF SEVERAL PHTHALIC ESTERS AS INITIAL MATERIALS FOR VARNISHES, by Dr. Klaproth. I. G. Farbenindustrie A. G., Schkopau, Ger. n.d. 12f (Text in German) Mi $1.75, Enl Pr $3.75. PB 110378
1. Phthalic acid - Esters - Germany 2. Varnishes - Basic materials - Germany 3. Micro BIOS FD 2576/47, Frames 1-11.
Abstract available as PB 110378s. 1p. Mi $1.25, Ph $1.25.

Chemical Engineering and Equipment

DRAWINGS RELATING TO PLANT FOR CHLORINE MANUFACTURE. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1940-1946. 43f drawings only (Legends in German) Mi $2.50, Enl Pr $7.50. PB 101010
1. Chlorine - Production - Germany 2. Chlorine - Production - Equipment - Germany 3. I.G. Farbenindustrie A.G., Leverkusen, Ger. - Plant design 4. Micro BIOS FD 1482/49, Frames 1-15.
Abstract available as PB 101010s. 1p. Mi $1.25, Ph $1.25.

MANUFACTURE OF MONO-CHLORBENZOL AND PHENOL BY PRESSURE FROM CHLOROBENZENE AND BY SULPHONATION, by W. H. Garrett. I. G. Farbenindustrie

A. G., Leverkusen, Ger. BIOS trip 2150. May 1946. 244f drawings Mi $9.00, Enl Pr $32.50. PB 110409
1. Benzene, Chloro - Production - Germany 2. Phenol - Production - Germany 3. BIOS trip 2150 4. BIOS FR 1224 5. Micro BIOS DCCS 2150/2119/1-65 6. Micro BIOS FD 1247/49, Frames 1-122.

REPORTS AND NOTES RELATING TO THE PRODUCTION OF ACETALDEHYDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1938-1944. 74f photos, drawings, graphs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110019
1. Acetaldehyde - Production - Germany 2. Filters, Chemical - Tests - Germany 3. Mercury - Recovery - Germany 4. Washers - Tests - Germany 5. Micro BIOS FD 2055/47, Frames 1-73.
Abstract available as PB 110019s. 2p. Mi $1.25, Ph $1.25.

Miscellaneous Chemicals

ACCOUNT OF EXPERIMENTAL WORK ON FURFURALS, ACETALS, PROPANOLS, WOOD ALCOHOLS AND RELATED MATTER, PT. 2. Deutsche Gold- und Silber-scheideanstalt A. G., Frankfort, Ger. 1924-1945. 578f (Text in German) Mi $9.00, Enl Pr $76.25. PB 101112
1. Micro BIOS FD 1537/48, Frames 601-1200.
For pt. 1, 3-4 see PB 101111, 101113-101114. For English abstract See PB 101111s.

ACCOUNT OF EXPERIMENTAL WORK ON FURFURALS, ACETALS, PROPANOLS, WOOD ALCOHOLS, AND RELATED MATTER, PT. 3. Deutsche Gold- und Silber-scheideanstalt A. G., Frankfort, Ger. 1924-1945. 516f (Text in German) Mi $9.00, Enl Pr $68.75. PB 101113
1. Micro BIOS FD 1537/48, Frames 1201-1800.
For pt. 1-2, 4 see PB 101111-101112,101114. For English abstract see PB 101111s.

ACCOUNT OF EXPERIMENTAL WORK ON FURFURALS, ACETALS, PROPANOLS, WOOD ALCOHOLS, AND RELATED MATTER, PT. 4. Deutsche Gold- und Silber-scheideanstalt A. G., Frankfort, Ger. 1924-1945. 510f (Text in German) Mi $9.00, Enl Pr $67.50. PB 101114
1. Micro BIOS FD 1537/48, Frames 1801-2296.
For pt. 1-3 see PB 101111-101113. For English abstract see PB 101111s.

ACETALDEHYDE ANALYSES. I. G. Farbenindustrie A. G., Schkopau, Ger. 1936-1941. 54f diagrs (Text in German) Mi $2.75, Enl Pr $8.75. PB 110018
1. Acetaldehyde - Analysis - Germany 2. Olefins - Determination - Germany 3. Micro BIOS FD 2053/47, Frames 1-53.
Abstract available as PB 110018s. 1p. Mi $1.25, Ph $1.25.

ACTIVITIES AND FACILITIES OF THE AIR LIQUIDE COMPANY IN FRANCE, by Paul M. Marcus. U. S. Office of Naval Research. London Branch. Apr 1950. 5p Mi $1.25, Ph $1.25. PB 110294
A description is given of two plants which fabricate low temperature equipment. The brass foundry, sheet metal fabrication, construction of liquid oxygen storage tanks, heat exchangers, fractionation columns and expansion engines are briefly described. Of particular interest are a newly developed vacuum-jacketed, portable liquid oxygen storage vessel, the first models of which have just been built, and a

new, simple, plate design for fractionating columns. The making of massive, brass castings up to four tons in weight in the brass foundry is also of interest. Technical report CNRL-52-50.

CORRESPONDENCE AND PATENT APPLICATIONS RELATING TO THE HYDROGENATION OF ALKOXY ALDEHYDES TO ALKOXY ALCOHOLS AND OF ALKOXY ACETALS TO ALKOXY OTHERS. Deutsche Gold- und Silberscheideanstalt, Frankfort, Ger. 1938-1942. 39f (Text in German) Mi $2.25, Enl Pr $6.25. PB 110009
1. Aldehydes, Alkoxy - Hydrogenation - Patents - Germany 2. Acetals, Alkoxy - Hydrogenation - Patents - Germany 3. Patents - Germany D78863 IVd/12o 4. Patents - Germany D78864 IVd/12o 5. Micro BIOS FD 2464/49, Frames 1-38.
Abstract available as PB 110009s. 1p. Mi $1.25, Ph $1.25.

HYDROGENATION OF ACETYLENE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1937-1945. 678f photos, drawings, graphs (Text in German) Mi $9.00, Enl Pr $88.75. PB 101053
1. Acetylene - Hydrogenation - Germany 2. Micro BIOS FD 2178/47, Frames 1-667.
Abstract available as PB 101053s. 1p. Mi $1.25, Ph $1.25.

IMPROVED METHOD OF SYNTHESIS OF ARYLDICHLOROPHOSPHINES, by Bernard Buchner. U. S. Naval Research Laboratory. Mar 1950. 17p graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 110440

An improvement has been effected in the method of synthesis of aryldichlorophosphines from toluene and phosphorus trichloride in the presence of aluminum chloride (Michaelis modification of Friedel-Crafts), in which a complexing agent is used to remove the $AlCl_3$ catalyst and in which the most favorable conditions of time, temperature, mode of addition, and ratio of reactants to catalyst are used. The improved procedure was extended to the synthesis of a number of aryldichlorophosphines from different alkyl-substituted benzenes. Products were identified by analysis and by the preparation of suitable derivatives. Physical data are reported for the aryldichlorophosphines synthesized. NRL R 3645.

LÖSUNGSMITTEL UND WEICHMACHER. (LÖKO REPORT) (SOLVENTS AND SOFTENING AGENTS). I. G. Farbenindustrie. n.d. 116p (Text in German) Mi $3.00, Enl Pr $8.00. PB 78354
1. Softening agents - Germany 2. Solvents - Germany 3. Micro FIAT C 121, Frames 382-532.
Enlargement print of frames 382-532 of FIAT microfilm reel C 121 (PB 20842).

MANUFACTURING PROCESSES FOR THE PRODUCTION OF ACETALDEHYDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1937-1944, 81f drawings, graphs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110022
1. Acetaldehyde - Production - Germany 2. Rossinsky process (Acetaldehyde production) 3. Micro BIOS FD 2054/47, Frames 1-79.
Abstract available as PB 110022s. 1p. Mi $1.25, Ph $1.25.

MONTHLY REPORT FEB 1942-JAN 1945 RELATING TO THE CARBON MONOXIDE AND ALUMINUM CHLORIDE PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1945. 82f (Text in German) Mi $3.75, Enl Pr $12.50. PB 110021

1. Aluminum chloride - Production - Germany 2. Carbon monoxide - Production - Germany 3. Micro BIOS FD 2078/47, Frames 1-81.
Abstract available as PB 110021s. 2p. Mi $1.25, Ph $1.25.

MONTHLY REPORTS RELATING TO ACETALDEHYDE PRODUCTION, JAN 1942-DEC 1944. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1944. 88f (Text in German) Mi $3.75, Enl Pr $12.50. PB 110023
1. Acetaldehyde - Production - Germany 2. Micro BIOS FD 2051/47, Frames 1-87.
Abstract available as PB 110023s. 1p. Mi $1.25, Ph $1.25.

NBS-NACA TABLES OF THERMAL PROPERTIES OF GASES. TABLES 7.10, 7.18, 7.20, 9.50, 19.10, COMPILED by Harold W. Woolley and Harold J. Hoge. U. S. National Bureau of Standards. Jul-Dec 1949. 19p graphs, tables Limited supply available from Mr. Joseph Hilsenrath, Heat and Power Division, U. S. National Bureau of Standards, Washington 25, D. C. Free of Charge. PB 101017
1. Gases - Thermodynamic properties 2. Hydrogen - Thermodynamic properties 3. Oxygen - Thermodynamic properties 4. Argon - Thermodynamic properties.
Contents: Table 7.10, Molecular hydrogen (ideal gas state), compiled by Harold W. Woolley. Jul 1949. Table 7.18, Density of molecular hydrogen, compiled by Harold W. Woolley, Dec 1949. Table 7.20 compressibility factor for molecular hydrogen, compiled by Harold W. Woolley, Dec 1949. Table 9.50 Vapor pressure of oxygen, compiled by Harold J. Hoge, Dec 1949. Table 19.10 Argon (ideal gas state), compiled by Harold W. Woolley, Dec 1949.

NEW DEFINITION OF A FLUID, PART II: MAXWELLIAN FLUID, by C. A. Truesdell. U. S. Naval Research Laboratory. Sep 1949. 42p Mi $2.50, Ph $6.25. PB 110439
This paper forms a part of a program aimed at derivation of the correct aerodynamic equations for moderately rarefied atmospheres, such as those at altitudes of 20,000 to 100,000 feet. The first part, "The Stokesian Fluid" (NRL Report P-3457, April 26, 1949) illustrated the basic ideas of the author's theory with a simple example. The present second part contains the full elaboration of the author's theory. Part I is entitled, Stokesian fluid, NRL P-3457. NRL R 3553.

ORGANOPHOSPHORUS COMPOUNDS: PREPARATION OF ALKYLDICHLOROPHOSPHINES, by Robert B. Fox. U. S. Naval Research Laboratory. Feb 1950. 9p graph, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 110325
The synthesis of alkyldichlorophosphines by the reaction of dialkylcadmium compounds with phosphorus trichloride is described. A homologous series of n-alkyldichlorophosphines from ethyl- to n-octyldichlorophosphine has been prepared, and some physical properties of each compound have been determined. NRL R 3633.

PHOSGENE AND METHYL CHLOROFORMATE PRODUCTION. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1943. 40f drawing, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 110014
1. Phosgene - Production - Germany 2. Methyl chloroformate - Production - Germany 3. Micro BIOS FD 2081/47, Frames 1-37.
Abstract available as PB 110014s. 3p. Mi $1.25, Ph $1.25.

RATE OF REACTION OF ALKALI METALS AND ALUMINUM BOROHYDRIDE WITH WATER, by T. K. Rice, F. J. Woods, and R. R. Miller. U. S. Naval Research

UNIVERSITY OF MICHIGAN LIBRARIES

Laboratory. Jun 1950. 36p photos, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.00. PB 110328

Experimental methods and apparatus are described for the determination of rapid reaction rates, specifically those of sodium, potassium, sodium-potassium alloys, and aluminum borohydride with water. It is believed that the measured rates for these reactions are governed by the extent of mixing of the reactants. The mechanisms of reactions between alkali metals and water are discussed in the light of published literature. The reactions of alkali metals with water and ammonia are compared. Modifications made on a commercial pressure pickup are discussed along with phenomena which influence pickup of rapid pressure change. NRL R 3508.

RESEARCH INTO THE PREPARATION OF ALCOHOLS, ESTERS, FATTY ACIDS, AND ALLIED PRODUCTS. PT. I. Treibstoffwerk Rheinpreussen, Homburg, Ger. 1937-1942. 731f drawings (Text in German) Mi $9.00, Enl Pr $96.25. PB 110361 1. Alcohols - Preparation - Germany 2. Esters - Preparation - Germany 3. Fatty acids - Preparation - Germany 4. Micro BIOS FD 178/47, Frames 1-665.

English abstract included. Abstract available as PB 110361s. 2p. Mi $1.25, Ph $1.25. For pt. II see PB 110362.

SPECTROSCOPIC PROPERTIES OF FLUOROCARBONS AND FLUORINATED HYDROCARBONS, by D. C. Smith, J. Rud Nielsen, L. H. Berryman, H. H. Classen, and R.L. Hudson. U. S. Naval Research Laboratory. Sep 1949. 189p diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $4.75. PB 110324

Report of spectral studies on fluorinated hydrocarbons by the Naval Research Laboratory and the University of Oklahoma Research Institute under Contract N7onr-398-T.O.1. Infrared spectra of 40 fluorinated compounds and Raman spectra of 25 compounds are presented. Vibrational assignments are proposed for $CH_2{=}CF_2$, $CF_2{=}CF_2$, $CF_2{=}CCl_2$, $CF_2{=}CFCl$, $CH_3{-}CF_3$, $CH_3{-}CCl_3$ $CF_2{=}CF{-}CF_3$, cyclic C_4F_8, and for nine fluorinated aromatics. Application of spectral data to analysis, molecular structure, thermodynamic properties, and molecular forces is discussed. Over 100 references. Final report on project NR019-120. Contract N7onr-398-T.O.1. NRL R 3567.

THE SPREADING OF LIQUIDS ON LOW-ENERGY SURFACES. I. POLYTETRAFLUORETHYLENE, by H. W. Fox and W. A. Zisman. U. S. Naval Research Laboratory. Mar 1950. 21p graphs, tables Mi $2.00, Ph $3.75. PB 101245

Polytetrafluoroethylene (TFE) is found to be an ideal low-energy surface for the study of contact angles and wetting relations of a solid with a wide variety of liquids. Observations show that there is a critical surface tension (17.5-20.5 dynes/cm) below which liquids wet TFE. It is found that the cosine of the contact angle is a linear function of the surface tension of the liquid. Using this fact, the difference between the work of adhesion and of cohesion can be expressed as a function of surface tension alone. It is concluded that the Young-Dupré relation coupled with the spreading coefficient permits a rational description of the results. These are found to be consistent and reasonable. The Doss and Rao relation for surface condensation leads to such high values for high-boiling liquids as to make it unlikely that the theory is correct. NRL R 3651.

SYNTHESIS OF PHENOTHIAZINE DERIVATIVES FOR ANTI-OXIDANT STUDIES, by N. L. Smith. U. S. Naval Research Laboratory. Oct 1949. 24p graph Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.75. PB 110327

As part of the investigation of the inhibitive properties of phenothiazine and its derivatives, and the mechanism of their antioxidant action, the synthesis and characteristics of a number of phenothiazine derivatives and their secondary amine precursors are described. NRL R 3615.

TECHNICAL INFORMATION ON ELECTROLYTIC PRODUCTION OF CHLORINE. I. G. Farbenindustrie A. G., Bitterfeld, Ger. n.d. 33f (Text in German) Mi $2.25, Enl Pr $6.25. PB 110387

1. Chlorine - Production - Germany 2. Micro BIOS FD 3101/48, Frames 1-32.

Abstract available as PB 110387s. 1p. Mi $1.25, Ph $1.25.

TEST MATERIALS AND TECHNICAL NOTES RELATING TO THE PRODUCTION OF ACETALDEHYDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1932-1942. 71f diagr, graph, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110020

1. Acetaldehyde - Production - Germany 2. Acetaldehyde - Production - Patents - Germany 3. Micro BIOS FD 2056/47, Frames 1-69.

Abstract available as PB 110020s. 2p. Mi $1.25, Ph $1.25.

WATER-DISPLACING FLUIDS AND THEIR APPLICATION TO RECONDITIONING AND PROTECTING EQUIPMENT, by H. R. Baker and W. A. Zisman. U. S. Naval Research Laboratory, Bellevue, D. C. Oct 1948. 46p graphs, tables Mimeo: $1.25 PB 98960

A fundamental investigation was made of organic fluids able to displace thin layers of water from metals by a preferential wetting mechanism. The preferred fluids of this class are combined with small concentrations of rust inhibitors of the polar type in order to improve protective and rust-preventive properties. Finally, addition of traces of antioxidants is shown to be effective in giving an increased storage stability to the fluids. Applications to reconditioning of electric motors, generators and starters are described. NRL C-3364.

YEARLY REPORT OF PROGRESS, OFFICE OF NAVAL RESEARCH PROJECT N7-ONR-348, by George D. Palmer. Alabama. University. School of Chemistry, Metallurgy and Ceramics. Sep 1949. 25p tables Mi $2.00, Ph $3.75. PB 110187

Report covers the following subjects: (A) Summary of Quantitative Analyses. (B) Mechanism of Formation of the Crude Crystals (C) Oxidation of Aniline Sulfur Dioxide Addition Product (Phenyl Sulfimic Acid (?) or the Aniline Salt (?) with Nitrobenzene.)

DETERIORATION STUDIES

PURE CULTURE TEST METHODS, by Paul D. Marsh. Apr 1945. 9f drawings Mi $1.25, Enl Pr $2.50. PB 101028

Pure culture test methods for fabric mildew-resistance tests are discussed and described together with various laboratory test organisms used. In inoculating test strips the pipette inoculating technique was used. Few organic compounds applied

to 8-oz duck at a level of 0.1% on the fabric will prevent the growth of Chaetomium globosum in a non-sterile pipette inoculam test. While many of the final answers to questions about pure culture tests are not yet at hand, it is felt that a background of data on pure fabric mildew preventives tested with pure cultures of fungi will serve as a guide to interpretation of laboratory tests with unknown compounds and to the controlling of mildewing of fabrics in the field.

SOIL-BURIAL TEST, by J. D. Dean. Apr 1945. 13f Mi $1.75, Enl Pr $3.75. PB 101029

Soil contact tests were extensively employed to determine the effectiveness of various proofing agents in protecting textiles against biological attack. The eight rotproofing treatments employed were comprised of four different copper soaps, the naphthenate, oleate, tallate, and resinate. The other treatments were Cu naphthenate-creosote, cuprammonium sulfate-creosote, cuprammonium carbonate, and Cu Amm fluoride.

ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

Communication Equipment

ELIMINATION OF DISCONTINUITIES IN OPEN LINES FOR HIGH POWER RF TRANSMISSION, by Helmut Brueckmann. U. S. Fort Monmouth Signal Laboratory. Apr 1950. 20p diagrs, drawings, tables Mi $1.75, Ph $2.50. PB 110424

In connection with open two-wire transmission lines for non-resonant antennas, a study was made of the variations of the input resistance and reactance with frequency and the observed increase of standing wave ratios. In the main, the variations were found to be due to lumped capacity of the supporting insulators in the line. Means of equalizing are discussed. Signal Corps Proj. no. 801. SCEL TM 1277.

HARMONIC POWER GENERATION USING UNBIASED IDEAL LINEAR RECTIFIERS, by R. L. Easton. U. S. Naval Research Laboratory, Washington, D. C. Dec 1949. 20p diagrs, graphs, tables Mi $1.75, Ph $2.50. PB 100989

Analyses have been made of three half-wave and three full-wave circuits employing unbiased linear rectifiers as harmonic power generators. These three circuits utilize a resistive generator and a resistive load, a resistive generator and a tuned load, and a tuned generator and a tuned load. The maximum harmonic gain, defined as the ratio of the available harmonic power to the maximum available fundamental power, has been found for each circuit. In all cases the gain decreases as the fourth power of the harmonic. Cdd harmonics above the first are not present. NRL R 3581.

QUALIFICATION TEST OF AN/ASA-3 STATIC DISCHARGER WICKS. U. S. Naval Air Development Center, Johnsville, Pa. n.d. 10p photo, graphs, tables Mi $1.25, Ph $1.25. PB 110185

1. Radio interference - Elimination 2. Dischargers, Static 3. AN/ASA-3 (Static dischargers) 4. Astatic Corp., Conneaut, Ohio 5. U. S. Naval Research Laboratory. Appendix 1 of NADC report no. ADC- EL-128-50.

SIDEBAND TECHNIQUE OF R-F WAVE ANALYSIS, by C. H. Bredall. U. S. Naval Research Laboratory. Sep 1949. 30p photos, diagrs, drawing, graph Mi $2.00, Ph $3.75. PB 110335

A technique for analyzing complex radio-frequency waves utilizes a visual display of the carrier and sideband components on a cathode-ray oscilloscope. An instrument developed to confirm this technique is described, and some of the developmental problems and operational phenomena are illustrated by oscillograms. The value of such a technique is stressed with regard to spectrum economy, and application of the technique to the problems of intercept and identification is indicated. The analyzer accurately displays relative sideband power and spectrum occupancy and resolves sidebands as low as 20 cycles per second. NRL R 3539.

STANDING-WAVE MEASURING EQUIPMENT FOR MICROWAVES, by P. A. Portmann. U. S. Naval Research Laboratory. Jan 1950. 31p photos, diagrs, drawings, graphs Mi $2.25, Ph $5.00. PB 110333

Standing-wave methods of making impedance measurements in the microwave region have been investigated to find means of increasing operating convenience and to reduce the time required in taking readings. Improvements can be made in manually-operated instruments by the use of a broad-band transition between the pickup probe and a bolometer detector and by a direct reading phase scale, calibrated as a function of frequency. The problem of improving the reading time required to obtain standing-wave ratios lead to the consideration of semi-automatic instruments and the use of phase shifters. Two such instruments gave only fair measurement accuracy; improvements in the design of r-f components are expected to lead to usable equipments. As compared with present techniques, there is a more rapid and direct determination of both standing-wave ratio and phase over a wide range of frequencies. NRL R 3612.

TELECOMMUNICATIONS AND EQUIPMENT IN GERMANY DURING THE PERIOD 1939-1945, PREPARED BY THE GENERAL POST OFFICE. British Intelligence Objectives Sub-Committee. 1950. 56p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.40. PB 100974

1. Telecommunications - Equipment - Germany 2. BIOS OR 29.

THEORY OF SURFACE WAVES AND THEIR APPLICATION TO TRANSMISSION LINES, by Georg Goubau. U. S. Fort Monmouth Signal Laboratory. Feb 1950. 47p graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.25. PB 100712

1. Wave propagation - Surface effect 2. Transmission lines 3. SCEL TM M-1260. Signal Corps Proj. No. 132A. D.A. Proj no. 3-99-12-021.

Electronics

APPLICATION OF ONSAGER'S RECIPROCAL RELATIONS TO THERMOELECTRIC, THERMOMAGNETIC AND GALVANOMAGNETIC EFFECTS, by Herbert B. Callen. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Nov 1947. 21p Mi $2.00, Ph $3.75. PB 110299

1. Thermoelectric effects 2. Thermomagnetic effects 3. Galvanomagnetic effects 4. MIT LIR TR 5.

O.N.R. Contract N5 ori-78, T.O.1. Abstract from part of a thesis entitled "On the theory of irreversible processes".

UNIVERSITY OF MICHIGAN LIBRARIES

BARIUM TITANATE AND BARIUM-STRONTIUM TITANATE AS NONLINEAR DIELECTRICS, by Shepard Roberts. Dec 1946. 117p diagrs, graphs Mi $4.75, Ph $15.00. PB 110295

1. Barium titanate - Dielectric properties 2. Barium-strontium titanate - Dielectric properties 3. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. 4. MIT LIR TR 1.

Thesis-Massachusetts Institute of Technology.

BREAKDOWN DIRECTIONS IN LITHIUM HALIDE CRYSTALS, by J. W. Davisson. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Sep 1947. 33p photos, diagrs Mi $2.25, Ph $5.00. PB 110297

1. Electron diffraction patterns 2. Crystals, Lithium halide - Breakdown 3. Dielectrica - Breakdown theory 4. MIT LIR TR 3.

O.N.R. Contract N5 ori-78. T.O.1.

BREAKDOWN OF IONIC CRYSTALS BY ELECTRON AVALANCHES, by A. von Hippel and R. S. Alger. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Jan 1949. 27p drawings, graphs Mi $2.00, Ph $3.75. PB 110308

1. Crystals, Ionic - Breakdown 2. Dielectrics - Breakdown theory 3. MIT LIR TR 16.

O.N.R. Contract N5 ori-07801.

COMPUTER FOR RADIATION PATTERNS OF HIGH-GAIN ANTENNAS, by B.I. Small. U. S. Naval Research Laboratory, Washington, D. C. Jan 1950. 33p photos, diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 100988

A computer, which solves the equation for the amplitude of the radiation pattern of a linear array of 45 equispaced elements fed with arbitrary amplitude and phase, has been built, tested and put into operation. The accuracy of the apparatus has been evaluated by direct measurement of errors, and by test patterns obtained from it with the same patterns computed by standard techniques. The machine error is absolute, resulting primarily from statistical sources, and has a maximum value of 0.25 percent of full-scale output in amplitude. NRL R 3995.

CRYSTAL STRUCTURE OF HEXAGONAL BARIUM TITANATE, by R. D. Burbank and H. T. Evans, Jr. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Aug 1948. 22p photos, drawings, tables Mi $2.00, Ph $3.75. PB 110305

1. Barium titanate - Crystal structure 2. MIT LIR TR 12.

O.N.R. Contract N5 ori-78, T.O.1.

CRYSTALLINE STARK SPLITTING AND MICROWAVE RESONANCE ABSORPTION IN PARAMAGNETIC SALTS, by C. Kittel and J. M. Luttinger. Massachusetts Institute of Technology. Research Laboratory of Electronics. Sep 1947. 34p graphs, tables Mi $2.25, Ph $5.00. PB 100994

A theoretical discussion is given of the application of microwave absorption measurements to determine energy levels in single crystals of paramagnetic salts. Selection rules are given for magnetic dipole transitions between sublevels in the presence of crystalline electric fields of cubic,tetragonal, trigonal and rhomib symmetry. The Zeeman effect in the presence of crystalline electric fields is discussed in some detail for three special cases. Numerical values are tabulated for the relative frequencies and line strengths associated with magnetic dipole transi-

tions in the cases discussed. Research reported in this document was made possible through support extended the Massachusetts Institute of Technology, Research Laboratory of Electronic jointly by the Army Signal Corps, the Navy Department (Office of Naval Research), and the Army Air Forces (Air Materiel Command), under the Signal Corps Contract no. W-36-039-sc-32037. MIT RLE TR 49.

DESIGN OF SATURABLE REACTORS, by J. E. Hart. U. S. Naval Research Laboratory. Mar 1950. 10p diagr, graphs Mi $1.25, Ph $1.25. PB 110337

A method for the design of saturable reactors is described. This method consists of plotting, from measured values, a set of characteristic curves for the material to be employed, and of substantiating certain properties concerning these curves by additional measurement. If the required properties can be substantiated to within the accuracy desired, a universal curve can be developed from which design information is obtained. In the case of series-connected saturable reactors with split Hypersil cores, the design method developed was accurate to within about three percent. NRL R 3642.

DIELECTRIC MEASUREMENT TECHNIQUE IN THE VERY HIGH FREQUENCY REGION, by W. B. Westphal. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Feb 1949. 30p photos, diagrs, graphs Mi $2.00, Ph $3.75. PB 110309

1. Dielectrics - High frequencies 2. MIT LIR TR 17.
O.N.R. Contract N5 ori-07801.

DOMAIN STRUCTURE AND DIELECTRIC RESPONSE OF BARIUM TITANATE SINGLE CRYSTALS, by B. Matthias and A. von Hippel. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Feb 1948. 22p photos, drawings, graphs Mi $2.00, Ph $3.75. PB 110302

1. Barium titanate - Dielectric properties 2. Barium titanate - Crystal structure 3. MIT LIR TR 9.
O.N.R. Contract N5 ori-78, T.O. 1.

DOMAIN STRUCTURES AND PHASE TRANSITIONS IN BARIUM TITANATE, by P.W. Forsbergh, Jr. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. May 1949. 62p photos, drawings, graphs Mi $3.00, Ph $8.75. PB 110310

1. Barium titanate - Crystal structure 2. Barium titanate - Dielectric properties 3. MIT LIR TR 18.
O.N.R. Contract N5 ori-07801.

ELECTRIC AND OPTICAL BEHAVIOR OF $BATIO_3$ SINGLE-DOMAIN CRYSTALS, by Walter J. Merz. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Jun 1949. 17p photos, graphs Mi $1.75, Ph $2.50. PB 110311

1. Barium titanate - Crystal structure 2. Barium titanate - Dielectric properties 3. MIT LIR TR 19.
O.N.R. Contract N5 ori-07801.

ELECTRIC BREAKDOWN WITH TRANSIENTS OF RISE TIMES BETWEEN 10-2 AND 10-8 SEC., by D. R. Young. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Dec 1948. 23p photos, diagrs, graphs,

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tables Mi $2.00, Ph $3.75. PB 110306
1. Dielectrics - Breakdown theory 2. MIT LIR TR 14.
O.N.R. Contract N5 ori-78, T.O.1.

ELECTRIC BREAKDOWN IN CO_2 FROM LOW PRESSURES TO THE LIQUID STATE, by D. R. Young. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Aug 1949. 33p diagrs, graphs Mi $2.25, Ph $5.00. PB 110313
1. Carbon dioxide - Research 2. Carbon dioxide - Solubility 3. MIT LIR TR 22.
O.N.R. Contract N5 ori-07801.

INTEGRATING CRYSTAL DETECTORS FOR HIGH ENERGY PHOTONS AND PARTICLES, by R. S. Alger. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Jan 1949. 30p photos, diagrs, graphs Mi $2.00, Ph $3.75. PB 110307
1. Photons 2. Detectors, Crystal 3. MIT LIR TR 15.
O.N.R. Contract N5 ori-07801.

INVESTIGATION OF GAS SPECTRA IN THE MICROWAVE RANGE, by Robert Louis Kyhl. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Sep 1947. 103p photos, drawings, diagrs, graphs, tables Mi $4.50, Ph $13.75. PB 110298
1. Gases - Spectrographic analysis 2. MIT LIR TR 4.
Thesis-M.I.T. O.N.R. Contract N5 ori-78, T.O.1.

LOW FREQUENCY DISPERSION IN IONIC CRYSTALS, by R. G. Breckenridge. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Apr 1948. 30p graphs, tables Mi $2.00, Ph $3.75. PB 110304
1. Crystals, Ionic - Dielectric properties 2. MIT LIR TR 11.
O.N.R. Contract N5 ori-78, T.O.1.

LOW FREQUENCY DISPERSION IN IONIC CRYSTALS CONTAINING FOREIGN IONS, by R. G. Breckenridge. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Oct 1949. 38p graphs, tables Mi $2.25, Ph $5.00. PB 110316
1. Crystals, Ionic - Dielectric properties 2. MIT LIR TR 26.
O.N.R. Contract N5 ori-07801.

MEASUREMENTS OF DIELECTRIC CONSTANT AND DIPOLE MOMENT OF GASES BY THE BEAT-FREQUENCY METHOD, by J. G. Jelatis. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Sep 1947. 20p drawing, diagrs, tables Mi $1.75, Ph $2.50. PB 110300
1. Dielectrics - Constants 2. Dipoles, Electric 3. MIT LIR TR 7.
O.N.R. Contract N5 ori-78, T.O.1.

METHODS OF OBTAINING AMPLITUDE-FREQUENCY SPECTRA, by A. E. Hastings. U. S. Naval Research Laboratory, Washington, D. C. May 1949. 7p graph Mi $1.25, Ph $1.25. PB 100992
Determination of the frequency spectrum of a complex time function has, heretofore, required laborious graphical or numerical analysis based on the Fourier integral. Through the application of known principles, and based upon the necessary

mathematical analysis, two practical methods have been worked out for obtaining the amplitude-frequency spectrum of a complex periodic or nonperiodic waveform. The procedure involves repeating a piece of the function at a fixed rate and determining the desired spectrum from the resulting line spectrum. NRL R 3466.

MICROSPACER TRIODES, by Otmar M. Stuetzer and Werner P. Schulz. U. S. Air Materiel Command. Engineering Division. Components and Systems Laboratory. Electronic Subdivision. Mar 1950. 12p photos, graph Mi $1.75, Ph $2.50. PB 100925

1. Miniaturization 2. Vacuum tubes, Triode - Miniaturization 3. Electronic equipment - Miniaturization 4. AAF TSELS 50-18.

MODULATION, GENERATION AND FREQUENCY MULTIPLICATION OF MICROWAVE OSCILLATIONS BY A SPIRAL BEAM OF ELECTRONS - I, by F. K. Willenbrock and S. P. Cooke. Harvard University. Cruft Laboratory. Jun 1949. 63p graphs Mi $3.00, Ph $8.75. PB 100993

A theoretical study is presented on a spiralling beam of electrons used in modulation, generation, and frequency multiplication of microwave oscillations in which the interaction between the electromagnetic field in a cavity and an electron beam projected along the axis of the cavity is examined. If the cavity is excited in a linearly polarized mode, the electromagnetic field will drive the electrons in a helical trajectory with an expanding radius, and the electrons will excite and transfer energy to a degenerate mode oriented spatially at right angles to the driving field. In the driving plane of polarization the electron beam will excite a field in phase opposition to the driving field. Contract N5 ori-76. Task order no. 1. NR-078-011. HU C L TR 79.

PLASMA OSCILLATIONS, by Gottfried Wehner. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. May 1950. 16p drawings, graphs Mi $1.75, Ph $2.50. PB 110356

This report covers an investigation of electron plasma oscillations, excited by a beam of fast electrons in a stabilized, low-pressure mercury discharge. Probe measurements reveal that the r-f oscillation fields are localized in thin layers, the plasma density and frequency of which follow Langmuir's Law. The beam of fast electrons traversing such an oscillation layer becomes velocity-modulated and excitation conditions result from drift time and bunching considerations. A sealed-off, all-metal tube described covers a frequency range between 800 and 4000 megacycles (five modes) without changing or matching any resonance circuit. Calculation of these oscillation modes agrees with the experimental results. It is concluded that testing of sealed-off tubes, especially to gain data about output, bandwidth, noise, and stability, together with further investigations concerning attenuation of the oscillation layers, beams produced by other than grid methods, and the best way for coupling-out of the r-f energy would be of value. AAF TR 6103.

PRODUCTION AND MEASUREMENT OF ULTRAHIGH-SPEED IMPULSES, by R. C. Fletcher. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Jun 1949. 60p drawings, diagrs, graphs Mi $2.75, Ph $7.50. PB 110312

1. Impulse, Electric - Research 2. Oscillographs, High frequency 3. MIT LIR TR 20 4. MIT LIR TR 21.

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O.N.R. Contract N5 ori-07801. Technical report XXI is issued with this: Impulse breakdown in the 10-9 sec. range of air at atmospheric pressure, by R.C. Fletcher.

SECTION IV, REPORT 5, MAR 28-AUG 1, 1941. Massachusetts Institute of Technology. Radiation Laboratory, Cambridge, Mass. Aug 1941. 7p Mi $1.25, Ph $1.25. PB 101210

1. Radiation - Research 2. MIT Rad Lab 104 3. NDRC Div 14.

STUDY OF SINGLE-SURFACE CORRUGATED GUIDES, by Walter Rotman. U. S. Air Force. Cambridge Research Laboratories, Cambridge, Mass. Feb 1950. 34p photos, diagrs, graphs Mi $2.25, Ph $5.00. PB 100724

An experimental determination of the electromagnetic properties of single-surface corrugated structures has been undertaken. Three units--a flat grooved plate, a circular corrugated cylinder, and a spirally grooved rod--were tested. The results of these tests, comparison with theory, and application of these structures to the antenna field are given here. AAF CRL E5055.

TABLES OF ELECTRIC DIPOLE MOMENTS, COMPILED by L. G. Wesson. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Apr 1947. 129p Mi $5.00, Ph $16.25. PB 110296

1. Dipoles, Electric 2. MIT LIR TR 2.

Contract N5-ori-78.

VARIABLE MAGNIFICATION, A MEANS OF INCREASING THE RESOLUTION OF TELEVISION TRANSMITTED DATA, by D. O. Collup. U. S. Naval Research Laboratory. Jan 1950. 16p photos, diagrs, drawings, Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D.C. Mimeo: $.50. PB 110336

Some of the problems arising in the military application of television are discussed, as are the resolution limitations of currently available techniques and equipment. It is shown that improved resolution is possible, justified, and desirable. Three methods are proposed for partially solving these problems; the capabilities and limitations of each are pointed out and experimental evidence given. It is concluded that, no matter what the resolution of the initial television link, several-fold improvement can be had on a lesser portion of the object by the techniques described. NRL R 3624.

Generators, Motors, Transmission, Distribution, and Allied Equipment

HIGH OPERATING TEMPERATURE, MINIATURIZED, POWER TRANSFORMERS, by Gene Tarrants. U. S. Air Materiel Command. Engineering Division. Components and Systems Laboratory. Electronic Subdivision. May 1950. 7p Mi $1.25, Ph $1.25. PB 110355

The general design objectives of high operating temperature, miniaturized, power transformers are discussed and the method is outlined for accomplishing a reduction of approximately 50% in their size and weight at top operating temperature of +200°C, which includes 115°C temperature rise. Specific details and design data are provided in the final report. Miniaturization of power transformers can be achieved through a selection of core and insulation materials which will permit greater temperature rise. AAF TSEIS 50-13.

MANUAL, CHAPTER 61: ELECTRIC GENERATORS AND VOLTAGE REGULATORS. U. S. Bureau of Ships. Jan 1948. 28p diagrs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 110091
1. Generators, Electric 2. Voltage regulators 3. NAVSHIPS 250-000-61.

MANUAL, CHAPTER 63: ELECTRIC MOTORS AND CONTROLLERS. U. S. Bureau of Ships. Oct 1947. 25p diagrs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110090
1. Motors, Electric 2. Controllers, Electric 3. NAVSHIPS 250-000-63.

TRANSFORMER DEVELOPMENT, SUPPLEMENT TO QUARTERLY PROGRESS REPORT NUMBER 6, by R. A. Dehn. General Electric Co., Research Laboratory, Schenectady, N. Y. Feb 1948. 47p graphs Mi $2.50, Ph $6.25. PB 110011
A typical transformer-coupled amplifier system is analyzed by using two equivalent circuits - one for high frequencies and one for low frequencies. Primary- and load-voltage magnitudes and phase are plotted against a generalized frequency term as independent variables. Various generalized parameters are included to cover the anticipated range of usefulness of these curves. All voltages are referred to the generated voltage in the driving tube.

TRANSIENT CHARACTERISTICS OF D-C MOTORS AND GENERATORS, by E. L. Brancato and A. T. McClinton. U. S. Naval Research Laboratory. Jan 1950. 47p photos, diagr, graphs, tables Mi $2.50, Ph $6.25. PB 110334
An experimental investigation has been conducted on a mock submarine propulsion plant to obtain design data on system fault currents for various maneuvering conditions and to check the validity of existing relations describing the transient behavior of d-c machines. The present report is concerned with the latter phase of investigation and presents oscillographic data with theoretical observations on the transient behavior of d-c machines. These observations indicate that the theoretical relations do not possess the accuracy necessary for optimum design of shipboard power systems. NRL R 3621.

ULTRA HIGH FREQUENCY TELEVISION TRANSMITTER EMPLOYING PHASE-TO-AMPLITUDE MODULATION. FINAL REPORT COVERING RESEARCH FROM FEB 1, 1949 TO FEB 28, 1950. SRI PROJECT NO. 135, PREPARED FOR MR. JOHN H. POOLE, LONG BEACH, CALIF. Stanford Research Institute, Stanford, Calif. Mar 1950. 54p photo, drawings, diagrs (part fold) graphs Available from U. S. Office of Technical Services, Dept. of Commerce, Washington 25, D. C. Mimeo: $1.50. PB 110417
1. Television - Transmitters.

Miscellaneous

BEEINFLUSSUNG DER KRISTALLISATION DURCH EIN ELEKTRISCHES BZW. MAGNETISCHES FELD (INFLUENCING CRYSTALLISATION BY AN ELECTRIC AND/OR MAGNETIC FIELD), by Dawihl and Rix. Studiengesellschaft Hartmetall, Berlin. Feb 1942. 7f (Text in German) Mi $1.25, Enl Pr $2.50. PB 100945
1. Crystal structure 2. Crystals - Lattices - Germany 3. BIOS FD 925 LD 4. Micro BIOS HEC 113 5. Micro BIOS FD 3909/47, Frames 1-5.
Listed in BIOS FR 925 p. 15 and appx I. p. 35. Abstract available as PB 100945s. 2p. Mi $1.25, Ph $1.25.

CONSTRUCTION AND PRESSURE TESTING OF FLAME PROOF ELECTRICAL EQUIPMENT. Siemens Schuckertwerke A. G., Berlin. 1938-1939. 38f photos, diagrs, graphs, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 101012
1. Electrical equipment - Flame proof - Germany 2. Micro BIOS FD 1448/49, Frames 1-35.
Articles reprinted from VDE Fachberichte 10(1938) p. 40-42; Die wärme, no. 40, 1939; Siemens Zeitschrift v. 19, 1939, no. 8; Elektrizität im bergbau v. 13, 1938, no. 5. Abstract available as PB 101012s. 2p. Mi $1.25, Ph $1.25.

DIODE SWITCHING CIRCUITS, by R. B. Palmiter. U. S. Air Force. Cambridge Research Laboratories, Cambridge, Mass. May 1950. 10p diagrs Mi $1.25, Ph $1.25. PB 101018
Diode selector circuits are characterized by one or two limiting levels and an intermediate range of unity transfer ratio. A few typical diode selector circuit configurations are discussed briefly, and possible applications for a binary carry device, voltage sampling, and time discrimination are noted. AAF CRL E4071.

ELECTROPLATING OF METALLIC SELENIUM, by A. von Hippel and M. C. Bloom. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Apr 1950. 28p photos, drawings, graphs, tables Mi $2.00, Ph $3.75. PB 110321
1. Selenium - Electroplating 2. MIT LIR TR 34.
O.N.R. Contract N5 ori-07801.

FREQUENCY STABILIZATION SYSTEM FOR REFLEX KLYSTRONS, by O. A. Tyson. U. S. Naval Research Laboratory. Jan 1950. 11p photo, drawings (1 fold) graph Mi $1.75, Ph $2.50. PB 110434
A method of stabilizing a reflex klystron was developed which emphasizes ease of operation rather than maximum obtainable degree of stability and provides either amplitude-modulated or continuous-wave outputs which are instantly selectable by the operator. Stabilities of the order of 1 part in 10^6 are obtained for both CW and modulated outputs over the operating range of 8500 to 10000 megacycles. The system is based upon a microwave discriminator, operating on 1 percent of the generated power, which consists of an unmatched hybrid tee, a phase shifter and a tunable reference cavity. NRL R 3614.

HANDBOOK OF FARMSTEAD WIRING DESIGN. Industry Committee on Interior Wiring Design, New York, N. Y. 1946. 57p diagrs, tables Available from Illuminating Engineering Society, 51 Madison Ave., New York 10, N. Y. $.40. PB 110145
This booklet explains in detail how to plan farmstead wiring. It's purpose is to establish a list of recommendations, compliance with which will result in an efficient and convenient wiring system giving adequacy for present and anticipated future needs. AIA File no. 31-C-61.

HERMETICALLY SEALING OF THE DEFLECTION YOKE COIL AS USED ON THE MT-351/MPG-1 EQUIPMENT, by H. J. Oosterling. Bendix Aviation Corp. Bendix Radio Div., Baltimore, Md. Final report. Jun 1947. 40p photos, drawings, tables Mi $2.25, Ph $5.00. PB 110190
1. Coils, Radio frequency - Hermetically sealing 2. Vacuum tubes - Mounts 3. MT-351/MPG-1 Indicator tube mount 4. SIG Contract W-36-039 sc-32130.
Contract W-36-039-sc-32130. File no. 15063-PH-46-91 (SCEL).

HIGH-VOLTAGE STABILIZATION BY MEANS OF THE CORONA DISCHARGE BETWEEN COAXIAL CYLINDERS, by S. W. Lichtman. Mar 1950. 14p photo, diagrs, graphs, table Mi $1.75, Ph $2.50. PB 110437

The corona discharge between coaxial cylinders affords a practical means for stabilizing high voltages in a manner analogous to the stabilization of low voltages by the familiar glow-tube regulator. The corona regulator is particularly suitable for stabilizing voltages above several hundred volts at currents below one milliampere. It is accordingly well adapted for controlling the beam focusing and accelerating potentials of cathode ray beam devices such as oscilloscope, iconoscope, and kinescope tubes, of electron diffraction cameras, and for stabilizing Geiger tube voltage sources. Some of the theoretical aspects of the corona discharge region as related to voltage stabilization are reviewed. Circuit design relationships are considered in detail and are developed to an extent sufficient for adapting particular corona regulator tube characteristics to specific performance requirements. Examples of constructional features and performance characteristics of typical high-voltage regulating tubes are presented. NRL R 3635.

I. E. S. GUIDE FOR ELECTRICAL MEASUREMENTS OF FLUORESCENT LAMPS - 1948. Illuminating Engineering Society. Committee on Testing Procedures for Illuminating Characteristics. 1948. 39p diagrs, tables Available from Illuminating Engineering Society, 51 Madison Ave., New York 10, N. Y. PB 110148

1. Lamps, Fluorescent - Tests.

ISOLIERMASSEN FÜR KABEL, LEITUNGEN UND DRÄHTE (INSULATION MATERIAL FOR CABLE, LINES AND WIRES), by Herr Burmeister. 1945. 18f (Text in German and English) Mi $1.75, Enl Pr $3.75. PB 110016

1. Insulation, Electrical - Materials - Germany 2. Cables - Insulation - Germany 3. Wire - Insulation - Germany 4. BIOS FR 1605/48, Frames 1-11+5.

Abstract available as PB 110016s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 1617, p. 5.

LOW-VOLTAGE X-RAY TUBE, by R. B. Vandegrift. U. S. Naval Research Laboratory, Washington, D. C. Dec 1949. 9p photo, drawing, graph, tables Mi $1.25, Ph $1.25. PB 110130

The low-voltage X-ray tube was developed to generate and transmit radiation at wavelengths longer than one angstrom. Operation is possible with target current up to 50 milliamperes and at target voltages from 0 to 12,000 volts, the target dissipation limit being 10 watts. The tube is built in a simple hard-glass bulb with a thin glass window approximately 5 microns in thickness. Preliminary performance tests indicate transmission of radiation in the region of 12 angstroms and shorter wavelengths, and in the ultraviolet. It is expected that the tube will prove useful in investigations in this little-known part of the spectrum between the soft X-rays and ultraviolet radiation. NRL R 3586.

PLANT FOR MANUFACTURE OF ELECTRIC LAMPS, PT. II. Osram G.m.b.H., Berlin. 1928-1946. 599f drawings (Text in German) Mi $9.00, Enl Pr $78.75. PB 110395

1. Micro BIOS FD 2368/48, Frames 126-391.

For pt. I see PB 110394.

RECOMMENDATIONS FOR A STANDARD METHOD FOR MEASURING AND REPORTING ILLUMINATION FROM ARTIFICIAL SOURCES IN BUILDING INTERIORS. Illuminating Engineering Society. Committee on Lighting Practice. n.d. 6p diagrs Available from Illuminating Engineering Society, 51 Madison Ave., New York 10, N. Y. PB 110143

1. Buildings - Lighting, Artificial 2. Illumination - Measurement 3. Lighting, Artificial - Measurement.

VERSUCHSBERICHT ÜBER PRÜFUNG VON GLASKÖRPERN IM EXPLOSIONSRAUM EINES AUTOMOBILMOTORS (TESTS WITH GLASS INSULATORS FOR SPARK PLUGS). I. G. Farbenindustrie A. G., Oppau, Ger. Jun 1927. 2f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100958

1. Spark plug insulators, Glass - Germany 2. Micro BIOS FD 2868/46, Item 12, Frame 1.

Abstract available as PB 100958s. 1p. Mi $1.25, Ph $1.25.

FOOD AND KINDRED PRODUCTS

CORRESPONDENCE AND REPORTS RELATING TO "ALPHA" AND "FRITZ" BUTTER MAKING PROCESSES. Hauptvereinigung der Deutschen Milch-Fette- und Eierwirtschaft, Berlin. 1942-1945. 365f (Text in German) Mi $9.00, Enl Pr $48.75. PB 101296

1. Butter - Manufacture - Germany 2. Butter making machinery - Germany 3. Alpha (Butter making process) 4. Fritz (Butter making process) 5. Micro BIOS FD 1884/49, Frames 1-365.

EXPERIMENTS FOR THE MANUFACTURE OF EDIBLE FATS, AND OF PREPARATIONS FOR SURGICAL APPLICATIONS, FROM BY-PRODUCTS OF THE FISCHER-TROPSCH SYNTHESIS. Steinkohlenbergwerk Rheinpreussen, Homberg, Ger. 1940-1942. 99f drawings, tables (Text in German) Mi $4.25, Enl Pr $13.75. PB 110372

1. Fats, Edible - Substitutes - Germany 2. Fischer-Tropsch process - By-products - Uses - Germany 3. Butal (Trade name) 4. Butalin (Trade name) 5. Carbutal (Trade name) 6. Micro BIOS FD 959/49, Frames 1-99.

Abstract available as PB 110372s. 1p. Mi $1.25, Ph $1.25.

FERROPRINTS RELATING TO GUNNAR FREDERIKSEN FILETFABRIK, MELBO, NORWAY, by A. L. Hoyer. 1942. 38f drawings only (Legends in German) Mi $2.25, Enl Pr $6.25. PB 110365

1. Fish - Processing plants - Norway 2. Micro BIOS FD 809/49, Frames 1-11+8.

Abstract available as PB 110365s. 1p. Mi $1.25, Ph $1.25. Factory is described in BIOS FR 493.

GRAIN STORAGE IN EAST AND CENTRAL AFRICA; REPORT OF A SURVEY (OCT 1948 TO JAN 1949), by T. A. Oxley. Gt. Brit. Colonial Office. 1950. 65p photos, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 110443

1. Grain - Storage - Africa.

Colonial Research Publications no. 5.

TORRY RESEARCH STATION CONTROLLED FISH-SMOKING KILN. Gt. Brit. Dept. of Scientific and Industrial Research. Food Investigation Board. 1950. 35p photos, drawings (4 fold), tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 101022

A general description of a new type kiln which overcomes difficulties encountered. Attention has been paid to securing uniform conditions, and in particular a number of simple devices have been introduced with the object of producing a stream of uniform velocity over the whole cross section of the kiln. Overall dimensions of the kiln are 21 feet 9 inches x 9 feet high by 5 feet 6 inches wide, and it has a capacity of about three-quarters of a ton of fish per batch. Photographs and detail drawings included. S.O. Code no. 47-156-10. DSIR FI L 10.

FUELS AND LUBRICANTS

ACETYLENE AND ETHYLENE HYDROGENATION. I. G. Farbenindustrie A. G., Schkopau, Ger. 1938-1944. 440f drawings, graphs (Text in German) Mi $9.00, Enl Pr $58.75. PB 110413

1. Acetylene - Hydrogenation - Germany 2. Ethylene - Hydrogenation - Germany 3. Palladium - Recovery - Germany 4. Catalysts, Hydrogenation - Germany 5. Micro BIOS FD 2157/47, Frames 1-433.

Abstract available as PB 110413s. 2p. Mi $1.25, Ph $1.25.

ANALYTICAL METHODS USED IN THE MANUFACTURE OF SYNTHETIC OILS AND FUELS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1930-1940. 536f drawings (Text in German) Mi $9.00, Enl Pr $71.25. PB 101000

1. Fuels, Synthetic - Production - Germany 2. Oils, Synthetic - Production - Germany 3. Micro BIOS FD 5428/47, Frames 1-536.

Abstract available as PB 101000s. 3p. Mi $1.25, Ph $1.25.

BEITRAG ZUR AUSSERHYDRODYNAMISCHEN SCHMIERUNG (EXTRA HYDRODYNAMIC LUBRICATION), by I. Morghen. Deutsche Versuchsanstalt für Luftfahrt, E.V., Berlin. Sep 1944. 96f photos, diagr, graph, tables (Text in German) Mi $4.25, Enl Pr $13.75. PB 101033

1. Lubricants - Friction tests - Germany 2. Lubricants - Viscosity - Germany 3. ZWB UM 1364 4. AAF T-2 T/809.

CHEMICAL TESTS AND PRODUCTS RELATING TO THE SS (LUBE) OIL PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1941-1944. 109f tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 110359

1. Ethylene - Specifications - Germany 2. Ethylene - Uses - Germany 3. Gasoline - Production - Germany 4. Micro BIOS FD 2565/47, Frames 1-115.

Abstract available as PB 110359s. 2p. Mi $1.25, Ph $1.25.

DATA AND CORRESPONDENCE ON TESTING OF LUBRICANTS. I. G. Farbenindustrie A. G., Oppau, Ger. 1938-1944. 286f graphs, tables (Text in German) Mi $9.00, Enl Pr $38.75. PB 110357

1. Lubricants - Tests - Germany 2. Micro BIOS FD 2871/46, Items 81-82, Frames 1-278.

Abstract available as PB 110357s. 2p. Mi $1.25, Ph $1.25.

DATA RELATING TO ISOBUTYL CHLORIDE, SYNTHESIS GAS AND BUTYL OIL DISTILLATION. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1943. 115f diagrs, tables (Text in German) Mi $4.75, Enl Pr $16.25. PB 110015
1. Oils, Butyl - Distillation - Germany 2. Gas - Synthesis - Germany 3. Propane, 1-Chloro-2-methyl - Preparation - Germany 4. Micro BIOS FD 1587/48, Frames 1-112.
Abstract available as PB 110015s. 2p. Mi $1.25, Ph $1.25.

DETERMINATION OF THE LINEAR BURNING RATES OF PROPELLANTS FROM PRESSURE MEASUREMENTS IN THE CLOSED CHAMBER. FINAL REPORT, by L. G. Bonner. Duke University. Oct 1945. 85p drawings, graph, tables Mi $3.75, Ph $11.25. PB 28530
1. Propellants - Burning rates 2. OSRD 4382.
Contract OEMsr-733.

DIVISION OF THE POLYMERIZATION PROCESS OF BENZINE FOR OIL INTO TWO STAGES, by Clar. Ruhrchemie A. G., Oberhausen-Holten, Ger. Nov 1944. 9f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 101303
1. Gasoline - Polymerization - Germany 2. Micro BIOS FD 805/48, Frames 1-5.
English abstract included.

DIVISION OF THE POLYMERIZATION PROCESS OF CRACKED BENZINE FOR OIL INTO SEVEN STAGES, by Clar. Ruhrchemie A. G., Oberhausen-Holten, Ger. Dec 1944. 9f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 101302
1. Gasoline - Polymerization - Germany 2. Micro BIOS FD 806/48, Frames 1-8.
English abstract included.

EVALUATION OF THE JENTZSCH FUEL TESTER, by J. Enoch Johnson, Ronald H. Blizzard, and Homer W. Carhart. U. S. Naval Research Laboratory. Feb 1950. 20p diagr, drawing, tables Mi $1.75, Ph $2.50. PB 110340
This report presents an evaluation of the Jentzsch method as a laboratory procedure for the determination of the ignition quality of Diesel fuels. A number of widely differing fuels were tested by the Jentzsch method, and it was found that a qualitative but not quantitative relationship exists between the Jentzsch comparison number and cetane number. NRL R 3602.

EXTRACTION OF ALCOHOLS FROM RECYCLE BENZINES OF THE OIL SYNTHESIS, by Clar. Ruhrchemie A. G., Oberhausen-Holten, Ger. Nov 1944-Feb 1945. 25f (Text in German) Mi $2.00, Enl Pr $5.00. PB 101299
1. Alcohols - Extraction from gasoline - Germany 2. Gasoline - Alcohol extraction - Germany 3. Oil - Synthesis - Germany 4. Micro BIOS FD 822/48, Frames 1-23.

FINANCIAL AGREEMENTS, COST CALCULATIONS, PRODUCTION PLANNING, STATISTICAL RETURNS, ETC. RELATING TO SS (LUBE) OIL PLANT AND ESTER OIL PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1938-1945. 243f (Text in German) Mi $9.00, Enl Pr $32.50. PB 101002
1. Lubricating oils - Production - Germany 2. Ester oils (Trade name) 3. I. G. Farbenindustrie, A. G. - Plants 4. Micro BIOS FD 2563/47, Frames 1-241.
Abstract available as PB 101002s. 2p. Mi $1.25, Ph $1.25.

FLOW MEASURING ON FUEL NOZZLES, by Velde. Ruhrbenzin A. G., Oberhausen-Holten, Ger. Oct 1944. 20f drawings, graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 110230

1. Nozzles, Fuel - Germany 2. Fuels - Flow - Germany 3. Micro BIOS FD 2298/49, Frames 1-18.

English abstract included. Abstract available as PB 110230s. 1p. Mi $1.25, Ph $1.25.

GENERAL METHOD FOR COMPUTATION OF EQUILIBRIUM COMPOSITION AND TEMPERATURE OF CHEMICAL REACTIONS, by Vearl N. Huff and Virginia E. Morrell. U. S. National Advisory Committee for Aeronautics. Jun 1950. 47p tables Mi $2.50, Ph $6.25. PB 110427

A rapidly convergent successive approximation process is presented that simultaneously determines both composition and temperature resulting from a chemical reaction. This method is suitable for use with any set of reactants over the complete range of mixture ratios as long as the products of reaction are ideal gases. This process is applicable for a wide variety of problems that include (1) combustion at constant pressure or volume and (2) isentropic expansion to an assigned pressure, temperature, or Mach number. NACA TN 2113.

HYDROGENATION OF ETHYLENE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1919-1945. 416f drawings, graphs, tables (Text in German) Mi $9.00, Enl Pr $56.25. PB 110414

1. Acetylene - Hydrogenation - Germany 2. Ethylene - Hydrogenation - Germany 3. Micro BIOS FD 2158/47, Frames 1-407.

Abstract available as PB 110414s. 2p. Mi $1.25, Ph $1.25.

KNOCK-LIMITED PERFORMANCE OF FUEL BLENDS CONTAINING ETHERS, by I. L. Drell and J. R. Branstetter. U. S. National Advisory Committee for Aeronautics. Apr 1950. 58p graphs, tables Mi $2.75, Ph $7.50. PB 100986

Knock ratings are given for 23 ethers, each blended with base fuels. A.S.T.M. Aviation, A.S.T.M. Supercharge, aircraft single-cylinder, and 17.6 engine ratings are presented. Fuel consumption, blending characteristics, temperature sensitivity, and lead susceptibility are also briefly discussed. NACA TN 2070.

NITRIC ACIDS (RFNA AND WFNA). California Institute of Technology. Jet Propulsion Laboratory, Pasadena, Calif. Oct 1946. 4f Mi $1.25, Enl Pr $1.50. PB 110112

Fuming nitric acid rapidly oxidizes combustible materials producing fires. Its mixture with gasoline, alcohol, and similar organic substances is explosive. When contacting the skin, it will produce severe burns. Detailed instructions are given in the safe handling and storing of fuming nitric acid and on methods of administering first aid in cases of accidents. Safety bulletin no. 1.

RECHERCHES THÉORIQUES SUR LE RENDEMENT ET LES CONDITIONS DE RÉALISATION DES SYSTÉMES MOTOPROPULSEURS Á RÉACTION. (THEORETICAL INVESTIGATIONS ON THE EFFICIENCY AND THE CONDITIONS FOR THE REALIZATION OF JÉT ENGINES), by Maurice Roy. Jun 1950. 236p drawings, graphs Mi $8.25, Ph $30.00. PB 110345

Approximate formulas are derived for important operating parameters, and for the thrust, cycle efficiency, and over-all efficiency of several types of jet-reaction en-

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gines. The engine types considered are the dry-fuel rocket, liquid-fuel rocket, and turbine rocket, all with and without thrust augmentation. Also considered are two types of engine with rotating jets: a propeller driven by heat engine and exhaust jets, and a propeller driven exclusively by jets. The engine types are compared with the conventional piston engine, and the flight speeds at which each engine type offers greatest promise are indicated. Areas requiring intensive research are indicated. Publications Scientifiques et techniques du Ministére de l'Air, Service des Recherches de l'Aéronautique. 1930. NACA TM 2159.

RESEARCH REPORTS ON LUBRICATING OIL SYNTHESIS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1940-1944. 113f drawings, graphs (Text in German) Mi $4.50, Enl Pr $15.00. PB 101301
1. Lubricating oils - Synthesis - Germany 2. Micro BIOS FD 810/48, Frames 1-107. English abstract included.

SCHWEFELGEHALT UN SCHMIEREINGNUNG VON FLUGMOTORENOELEN (AIRCRAFT ENGINE LUBRICANTS AND THEIR PROPERTIES), by Philippovich. Deutsche Versuchsanstalt für Luftfahrt, Berlin. Jul 1943. 30f diagr, graphs, tables (Text in German and English) Mi $2.00, Enl Pr $5.00. PB 101032
1. Engines, Aircraft - Lubricating oils - Germany 2. Lubricating oils - Physical properties - Germany 3. AAF T-2 T/803 4. ZWB UM 1049.

WEEKLY, MONTHLY, AND QUARTERLY REPORTS RELATING TO PRESSURE SYNTHESIS IN THE PRODUCTION OF SYNTHETIC OILS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1938-1944. 394f tables (Text in German) Mi $9.00, Enl Pr $53.50. PB 101323
1. Oils, Synthetic - Production - Germany 2. Micro BIOS FD 80/48, Frames 702-1090.
English abstract included.

HIGHWAYS AND BRIDGES

LOCKBOURNE NO. 3-OVERLAY MAT; REPORT OF CONSTRUCTION. U. S. Army. Corps of Engineers. Ohio River Div. Jun 1948. 109p photos, drawings, graphs, tables Available from The Director, Ohio River Mission Laboratories, 5851 Mariemont, Ohio. $1.00. PB 101203
Purpose of the investigation was to obtain information of the behavior, under B-29 airplane wheel loads, of flexible overlays of various thicknesses and design on a rigid pavement with a relatively poor subgrade. This report is concerned with the design and construction of a test section and is prepared for the purpose of providing a record of the design features, the details of construction, and the physical properties of the concrete, overlay materials and subgrade soil.

REPORT ON DESIGN AND CONSTRUCTION OF THE BAKER RIVER BRIDGE, BAKER RIVER HIGHWAY, WASHINGTON FOREST HIGHWAY PROJECT 25-C4, THE FIRST BRIDGE IN THE NORTHWEST HAVING A PRECAST CONCRETE DECK, AND 1. A DISCUSSION OF THE PRECAST STRINGERS IN TRESTLES, TURNAGAIN ARM PROJECT, ALASKA; 2. PLANS FOR PROPOSED PRECAST DECK DESIGN ELIMINAT-

ING ALL "ON JOB" FORM WORK AND INCLUDING PRECASTING OF CURBS. PREPARED FOR W. H. LYNCH, DIVISION ENGINEER, BUREAU OF PUBLIC ROADS, PORTLAND, ORE, by R. E. Tarbet. Jan 1950. 27p photos, drawings Mi $2.00, Ph $3.75. PB 110263

1. Bridges - Design 2. Bridges - Construction 3. Baker River Bridge, Burlington, Wash. 4. Turnagain Arm Project, Alaska.

SOIL SURVEY PROCEDURE. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. 1949. 46p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 100372

This paper outlines the way in which results obtained can be interpreted and applied and deals with the exploration of soil conditions over the site by boring, the preparation of vertical sections, soil sampling and the reduction of the information obtained to engineering recommendations. Methods of recording water-table contours are explained and a simple type of mobile laboratory suitable for soil surveys carried out by local authorities is described. DSIR RR TP 15.

TEMPERATURE STRESSES IN CONCRETE PAVEMENTS (TEMPERATURSPÄNNINGAR I BETONGBELÄGGNINGAR), by Sven G. Bergström. Svenska Forskningsinstitutet för Cement och Betong, Stockholm. 1950. 38p drawings, graphs, tables Mi $2.25, Ph $5.00. PB 110287

This paper presents methods, formulae and diagrams for the calculation of temperature stresses in concrete pavements. Special attention has been given to the tensile stresses at the bottom of the pavement caused by temperature variations. These stresses are of particular interest in the design of non-reinforced and crack-reinforced pavements, and the results can be used for determining the distance between the warping joints and the contraction joints. Furthermore, the paper deals with the tensile stresses at the top of the pavement, which are of importance in the design of statically reinforced pavements. Finally, an account is given of a theory which can be utilized for determining the maximum permissible distance between the expansion joints, so as to prevent the compressive stresses from causing separation of the pavement from the subgrade and blow-up. Svenska. Forskningsinstitutet för Cement och Betong, Stockholm. Handlingar nr. 14.

UTILIZATION OF AVAILABLE WORKING TIME OF BITUMINOUS FINISHERS ON BITUMINOUS SURFACING PROJECTS IN EASTERN AND SOUTHERN STATES. U.S. Highway Research Board. Committee on Economics of Highway Construction and Maintenance Methods. Jul 1949. 5p tables Mi $1.25, Ph $1.25. PB 98512

1. Bituminous materials - Distributors 2. Time study.

INSTRUMENTS

EFFECTS OF NOISE AND VIBRATION ON PSYCHOMOTOR EFFICIENCY. PROGRESS REPORT OF PROJECT II, by S. S. Stevens. U. S. National Research Council. Committee on Sound Control in Vehicles. Mar 1941. 115p photos, diagrs, drawings, graphs Mi $4.75, Ph $15.00. PB 101309

1. Sound - Physiological effects 2. Noise - Physiological effects 3. Vibration -

Physiological effects 4. U. S. Office of Scientific Research and Development 5. Harvard University. Psycho-Acoustic Laboratory 6. MHR 2 7. OSRD 32.

FUNCTIONAL DESCRIPTION OF THE EDVAC, VOLUME I. Pennsylvania. University. Moore School of Electrical Engineering. Nov 1949. 206p tables Mi $7.50, Ph $26.25. PB 110330

Report of work under contract W36-034-ORD-7593 with the Ordnance Department, Department of the Army. See also PB 110331 for Volume 2, and PB 110332 for Errata for Volumes 1 and 2. Research division report 50-9.

FUNCTIONAL DESCRIPTION OF THE EDVAC, VOLUME II. Pennsylvania. University. Moore School of Electrical Engineering. Nov 1949. 186p fold. drawings, tables Mi $6.75, Ph $23.75. PB 110331

The two volumes cover the functional description of the EDVAC which is an automatically sequenced serial binary electronic digital computer. It has a high-speed memory of 1024 words and a low-speed memory, originally designed to have a capacity of about 150,000 words. The entire memory, both low- and high-speed, is under complete automatic control, and any portion of it may receive data from the computer, or omit data to the computer or the dispatcher.

EIN GERÄT ZUR MESSUNG DER WANDSCHUBSPANNUNG TURBULENTER REIBUNGSSCHICHTEN. (INSTRUMENT FOR MEASURING THE WALL SHEARING STRESS OF TURBULENT BOUNDARY LAYERS), by H. Ludwieg. May 1950. 22p drawing, graphs Mi $2.00, Ph $3.75. PB 110236

A relation between the rate of heat transfer, the surface shearing stress, and the physical properties of the flowing medium is derived theoretically. An instrument designed to measure the heat transfer is described and its calibration by making use of a known shear stress is discussed. The instrument can be used to obtain the direction as well as the magnitude of the local shearing stress in a turbulent boundary layer by measuring the local rate of heat transfer. NACA TM 1284.

INVESTIGATIONS OF THE MEASUREMENT OF NOISE. PROGRESS REPORT NO. 14, JUL 1, 1949 TO SEP 30, 1949, by Conrad J. Fowler and Francis T. Nicholson. Pennsylvania. University. Moore School of Electrical Engineering and U.S. Bureau of Ships. Oct 1949. 31p diagrs, graphs, tables Mi $2.25, Ph $5.00. PB 110118

1. Noise - Measurements 2. Meters, Sound.

Contract NObsr 39269. For progress reports 1-10, 12-13, 15 see PB 85974- PB 85981, PB 110114-PB 110117, PB 110119.

INVESTIGATIONS OF THE MEASUREMENT OF NOISE. PROGRESS REPORT NO. 15, OCT 1, 1949 TO DEC 30, 1949, by Conrad J. Fowler, Francis T. Nicholson and Arnold Krell. Pennsylvania. University. Moore School of Electrical Engineering and U. S. Bureau of Ships. Jan 1950. 20p diagrs, graphs, tables Mi $1.75, Ph $2.50. PB 110119

1. Noise - Measurements 2. Meters, Sound.

Contract NObsr 39269. For progress reports 1-10, 12-14 see PB 85974-PB 85981, PB 110114-PB 110118.

A LOGARITHMIC RECORDER FOR MEASURING LIGHT DOWN TO LOW INTENSITIES, by W. S. Plymate, Jr. U. S. Naval Research Laboratory. Jan 1950. 12p photos, diagrs, graphs Mi $1.75, Ph $2.50. PB 110436

A new instrument has been developed to prevent injury to photomultiplier tubes and to avoid switching to various sensitivity levels when such tubes are used in photometers. It covers a very wide range on a log scale, and intensities may be recorded directly on an ordinary Esterline-Angus 0-1 ma recorder. A multiplier feedback circuit is combined with a zero balancing circuit and two pentode tubes that automatically cut in at higher intensities to correct for deviations from a true logarithmic response. NRL R 3598.

NULL-COIL PENDULUM MAGNETOMETER, by C. A. Domenicali. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Oct 1949. 44p drawings, graphs Mi $2.50, Ph $6.25. PB 110315
1. Magnetometers, Electric 2. Crystals, Magnetite - Electrical properties 3. Crystals, Magnetite - Magnetic properties 4. MIT LIR TR 24 5. MIT LIR TR 25.
O.N.R. Contract N5 ori-07801. Technical report XXV is issued with this: Magnetic and electric properties of natural and synthetic single crystals of magnetite, by C.A. Domenicali.

OSCILLATION PROPERTIES OF PIEZO-ELECTRIC MEASURING INSTRUMENTS, by Herr Gohlke. May 1940. 57f photos, diagrs, drawings, graphs, tables Mi $2.75, Enl Pr $8.75. PB 100982
1. Instruments, Measuring - Piezo-electric - Germany 2. Pressure - Measurements - Germany 3. RTP/TIB T 3411 4. Micro GDC 10/1123T 5. Micro BIOS FD 912/48, Frames 1-55.
Abstract available as PB 100982s. 2p. Mi $1.25, Ph $1.25.

SELF-TRACKING BRIDGE DETECTOR, by J. L. Upham, Jr. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Apr 1950. 17p diagrs Mi $1.75, Ph $2.50. PB 110320
1. Detectors, Electromagnetic 2. MIT LIR TR 33.
O.N.R. Contract N5 ori-07801.

SWEEP SYSTEM FOR THE MICROOSCILLOGRAPH, by D. O. Smith. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Mar 1950. 19p drawings, diagrs Mi $1.75, Ph $2.50. PB 110319
1. Oscillographs, High frequency - Sweep circuits 2. MIT LIR TR 32.
O.N.R. Contract N5 ori-07801.

SYMPOSIUM; PRESENT STATUS OF FUNDAMENTAL RESEARCH IN VISION. ABSTRACTS OF PAPERS PRESENTED UNDER THE AUSPICES OF THE PSYCHOPHYSIOLOGY BRANCH, OFFICE OF NAVAL RESEARCH AT A MEETING OF THE NAVAL RESEARCH ADVISORY PANEL IN PSYCHOPHYSIOLOGY, COLUMBIA UNIVERSITY 30-31 JANUARY 1950. U. S. Office of Naval Research. Psychophysiological Branch. 1950. 21p table Mi $2.00, Ph $3.75. PB 101235
This document constitutes the abstracts of papers presented. It coordinates the latest results of all investigators conducting basic work in vision under contract with ONR.

TESTS IN THE N.P.L. ELECTRIC TANK ON A 4:1 AXISYMMETRICAL DIFFUSER HAVING A DISCONTINUITY IN THE WALL VELOCITY, by F. Cheers and W. G. Rayner. Gt. Brit. Ministry of Supply. Aeronautical Research Council. 1950. 6p

graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 101242
1. Diffusers - Subsonic speed tests - Gt. Brit. 2. ARC CP 2. Fluid Motion Subcommittee F.M. 908 Mar 1946.

LEATHER AND LEATHER PRODUCTS

INVESTIGATION OF SOME GERMAN LEATHER TANNERIES, REPORTED by S. G. Mohamed. British Intelligence Objectives Sub-Committee. Aug 1946. 45p Mi $2.50, Ph $6.25. PB 110102
1. Tanneries - Germany 2. Norddeutsche Lederwerke A. G., Neumünster, Ger. 3. Lederwerke Wiemann A. G., Neumünster, Ger. 4. Knecht, Johannes & Söhne, Elmshorn, Ger. 5. Moller, Fr., Brackwede, Ger. 6. Meyer, J., & Söhne, Offenbach, Ger. 7. Lederwerke Becker & Co., Offenbach, Ger. 8. Lederfabrik Rugner, Offenbach, Ger. 9. Freudenberg, Carl, G.m.b.H., Weinheim, Ger. 10. BIOS FR 1495, Item 22.

LUMBER AND WOOD PRODUCTS

CRITICAL BUCKLING STRENGTH OF STIFFENED FLAT PLYWOOD PLATES IN COMPRESSION AND SHEAR-CLOSELY SPACED STIFFENERS, by C. B. Norris, W. J. Kommers, P. F. McKinnon. U. S. Forest Products Laboratory, Madison, Wis. Feb 1948. 39f photos, diagrs, graphs, tables Mi $2.25, Enl Pr $6.25. PB 110214

The equations previously derived for the critical stresses in flat plywood plates subjected to edgewise compression or shear were applied to plywood stiffened with a multiplicity of parallelly placed stiffeners. It was found that these equations apply with reasonable accuracy, if the over-all elastic properties of the stiffened plates are substituted in them. In the verification of the equations, the elastic properties used were determined for the plates tested by auxiliary tests. Methods were derived for the computation of the over-all elastic properties of multiply stiffened plywood plates from the elastic properties of the plywood and the stiffeners, and the dimensions and spacing of the stiffeners. These methods were verified by test and found to yield good approximations of the over-all properties. FPL 1800.

DEDICATION OF WOODLANDS, PRINCIPLES AND PROCEDURE. GT. BRIT. FORESTRY COMMISSION. SECOND EDITION. Jan 1950. 54p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 101020

This pamphlet was prepared to encourage the application of systematic management to private woodlands. The action was felt desirable because of the depletion of reserves of standing timber in Great Britain. S.O. Code no. 70-516-2-50. FC Booklet 2.

INVESTIGATION OF 8-1 PLYWOOD SCARF JOINTS, by R. L. Andrews. Beech Aircraft Corp., Wichita, Kansas. Jul 1943. 27f photos Mi $2.00, Enl Pr $5.00. PB 110217

The results are given of an investigation of the strength of 8-1 plywood scarf joints. The specimens consisted of three-ply mahogany-poplar plywood 1/16, 3/32, 1/8, and

3/16 in. thick. The tensile stresses sustained by the test specimens were compared to the allowable stresses for 12-1 scarf joints. The allowable stresses for 12-1 scarf joints were the same as the allowable stresses for the plywood itself, as a 12-1 scarf joint is supposed to be just as strong as the plywood from which it is made. U. S. Army General structural report 96.

PROVISIONAL STANDARDS FOR TESTING STRENGTH VALUES OF LAMINATED WOCDEN AIRCRAFT COMPONENTS. Behr, Erwin, Wendlingen, Ger. 1942. 7f diagrs (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 101332
1. Wood - Strength - Germany 2. Wood - Tests - Germany 3. Micro GDC 15/251 T 4. RTP A3 5. Micro BIOS FD 480/48, Frames 1-6.
English abstract included.

WALLBOARD FROM WOOD WASTE WITHOUT RESINS BY A DRY PROCESS, by Donald F. Othmer and Louis G. Ricciardi. Northeastern Wood Utilization Council, New Haven, Conn. Jan 1950. 19p photo, drawing, tables Available from Northeastern Wood Utilization Council, New Haven, Conn. PB 110074
1. Wallboard - Manufacture 2. Wood waste - Utilization.
Reprinted from Wallboard production and uses, Bull. 31, Jan 1950.

WOOD; REPORT OF SYMPOSIUM ON WOOD. U. S. Office of Naval Research. Oct 1949. 537p photos, graphs, tables Available from Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C. Mimeo: $7.50. PB 101233
1. Wood - Research 2. U. S. National Research Council 3. NRC-ONR symposium on wood, 1949.
NRC-ONR symposium on wood, Jun 16-17, 1949. Contains reports cataloged as PB 98100-PB 98117.

MACHINERY

AIR BLAST RECTIFYING VALVES AND D.C. HIGH-VOLTAGE TRANSMISSION, by Erwin Marx. 1945. 33f photos, drawings, diagrs (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 110373
1. Valves, Regulator - Germany 2. Blast, Air - Valves - Germany 3. Marx air blast rectifier system 4. Power transmission, Electric - Germany 5. Micro BIOS FD 985/48, Frames 1-9+24.
Abstract available as PB 110373s. 1p. Mi $1.25, Ph $1.25. Page 5 omitted from first paper. See also FIAT FR 904, p. 3-6. Some drawings will not reproduce.

BUSSMANN PRESS USED FOR COMPACTING IRON POWDER. Bussmann, Wilhelm, Zahnräderfabrik, Munich, Ger. n.d. 1f drawing only (Legend in German and English) Mi $1.25, Enl Pr $1.50. PB 101097
1. Presses - Powder metallurgy - Design - Germany 2. Iron powder compacts - Germany 3. Micro BIOS FD 1143/47, Frame 1.

DESIGN AND PERFORMANCE OF FAMILY OF DIFFUSING SCROLLS WITH MIXED-FLOW IMPELLER AND VANELESS DIFFUSER, by W. Byron Brown and Guy R. Bradshaw. U. S. National Advisory Committee for Aeronautics. 1949. 11p drawings, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington, D. C. $.15. PB 110342

The design theory, intended to maintain a uniform pressure around the scroll inlet, permits determination of the position of scroll cross sections of preassigned area by considering the radial variation in fluid density and the effects of friction along the scroll. The effect of certain variations in scroll shape was investigated by studying scrolls having angles of divergence (of the scroll walls downstream of the entrance section) of 24°, 40°, and 80°. A second 80° scroll was of asymmetrical construction and a third was plaster-cast instead of sandcast. Each scroll was tested as a compressor component at actual impeller tip speeds of 700 to 1300 feet per second from full throttle to surge. NACA 936.

DEVELOPMENT AND COMPARISON OF NEW RADIATOR ELEMENTS; PT. II: BASIC BEHAVIOUR OF RADIATOR ELEMENTS AND MEASUREMENT RESULTS, by W. Linke. Aerodynamisches Institut, Technische Hochschule, Aix-la-Chapelle. Feb 1939. 54f diagrs, graphs, tables Mi $2.75, Enl Pr $8.75. PB 110037
1. Radiators - Performance - Germany 2. Radiators - Fins - Germany 3. Flow, Laminar - Measurements - Germany 4. Flow, Turbulent - Measurements - Germany 5. Micro GDC 10/1066 T 6. RTP/TIB T 3471 7. Micro BIOS FD 1600/48, Frames 1-52.
Abstract available as PB 110037s. 1p. Mi $1.25, Ph $1.25. Translated by Gt. Brit. Ministry of Supply.

DRAWINGS FOR CENTRIFUGAL CASTING EQUIPMENT. Deutsche Eisenwerke A.G., Schalker Verein, Gelsenkirchen, Ger. 1947. 40f drawings only (Legends in German) Mi $2.25, Enl Pr $6.25. PB 110207
1. Machines, Casting - Centrifugal - Design - Germany 2. BIOS FR 1802 LD 3. Micro BIOS FD 3117/48, Frames 1-6+27.
Abstract available as PB 110207s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 1802.

DRAWINGS RELATING TO BLAST FURNACE PLANT. Reichswerke A. G. Herman Goering Stahlwerke, Salzgitter, Ger. 1937-1940. 444f drawings only (Legends in German) Mi $9.00, Enl Pr $58.75. PB 110206
1. Furnaces, Blast - Design - Germany 2. Micro BIOS FD 2856/48, Frames 1-75+356.
Abstract available as PB 110206s. 1p. Mi $1.25, Ph $1.25.

DREHMEISSEL MIT SCHÄFTEN AUS PRESSSTOFFEN (TURNING TOOL WITH SHANK OF PRESSED MATERIAL). Studiengesellschaft Hartmetall, Berlin. Jan 1939. 10f diagr, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 100968
1. Lathe tools - Tests - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11164 4. Micro BIOS FD 3799/47, Frames 1-8.
Abstract available as PB 100968s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 16.

DREHVERSUCHE MIT ERHITZTEN WERKSTOFFEN (TURNING EXPERIMENTS WITH HEATED MATERIALS) , by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Nov 1940. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 110403
1. Lathe tools - Temperature measurements - Germany 2. Lathe tools - Tips - Tests - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11246 5. Micro BIOS FD 3851/47, Frames 1-2.
English abstract included. Listed in BIOS FR 925 appx. I, p. 23.

EARTH HEAT PUMP RESEARCH, PT. I, by Estel B. Penrod, Oliver W. Gard, Charles D. Jones, Herman E. Collier and Robert N. Patey. Kentucky. University. Engineering Experiment Station, Lexington, Ky. Dec 1949. 63p photos, diagrs, graphs, tables Available from Engineering Experiment Station, Univ. of Kentucky, Lexington, Ky. PB 97086

1. Pumps, Earth heat.

Bulletin no. 14.

FUGENHOBELN (FLAME GOUGING), by L. Wolff. Jun 1944. 3f photos, tables (Text in German) Mi $1.25, Enl Pr $1.50. PB 101055

1. Cutting torches - Germany 2. BIOS FR 1849 LD 3. Micro BIOS FD 665/59, Frames 1-2.

Abstract available as PB 101055s. 2p. Mi $1.25, Ph $1.25. Reprinted from Werkstattechnik, der betrieb, v. 38/23, no. 6, Jun 1944. Listed in BIOS FR 1849, p. 122.

IMPROVEMENTS IN OCTANE NUMBER OF CRACKED BENZINES FROM THE FISCHER-TROPSCH SYNTHESIS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1937-1944. 101f graphs, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 110368

1. Gasoline - Octane number - Germany 2. Gasoline, Anti-knock - Germany 3. Micro BIOS FD 85/48, Frames 1-101.

INVESTIGATION OF 75-MILLIMETER-BORE CYLINDRICAL ROLLER BEARINGS AT HIGH SPEEDS. I - INITIAL STUDIES, by E. Fred Macks and Zolton N. Nemeth. U. S. National Advisory Committee for Aeronautics. Jul 1950. 49p photos, drawings, diagrs, graphs, tables Mi $2.50, Ph $6.25. PB 101179

An initial study of 75-millimeter-bore roller bearings of three cage types was conducted over range of DN (bore x speed) values from 0.3×10^6 to 1.65×10^6 and loads from 7 to 1613 pounds. Significant differences in operating characteristics of three bearing types existed. NACA TN 2128.

INVESTIGATION OF THE STRUCTURE OF S-1 TIPS MADE BY THE CARBURISATION OF OXIDE MIXTURES. Studiengesellschaft Hartmetall, Berlin. Nov 1940-Oct 1941. 13f photos, tables (Text in German) Mi $1.75, Enl Pr $2.50. PB 110404

1. Tools, Cutting - Carbide tipped - Structure - Germany 2. Tips - Structure - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11247 5. Micro BIOS HEC 11335 6. Micro BIOS FD 3896/47, Frames 1-9.

English abstract included. Listed in BIOS FR 925 appx. I, p. 23 and 32.

OPERATION OF THE FISCHER-TROPSCH SYNTHESIS, AND TREATMENT OF RESULTING PRIMARY PRODUCTS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1938-1943. 106f drawings, graphs, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 110374

1. Fischer-Tropsch process 2. Gasoline - Analysis - Germany 3. Gasoline - Vapor formation - Germany 4. Micro BIOS FD 994/49, Frames 1-102.

PRESSFORM 15, DRAWING 1A. Vereinigte Deutsche Metallwerke A. G., Altena, Ger. Aug 1941. 3f drawings only (Legends in German) Mi $1.25, Enl Pr $1.50. PB 101101

1. Presses - Powder metallurgy - Design - Germany 2. Micro BIOS FD 4408/47, Frame 1.

PRESSFORM 15, DRAWING 1C. Vereinigte Deutsche Metallwerke A. G., Altena, Ger. Aug 1941. 4f drawings only (Legends in German) Mi $1.25, Enl Pr $1.50. PB 101100

1. Presses - Powder metallurgy - Design - Germany 2. Micro BIOS FD 1138/47, Frame 1.

PRESSFORM 88 MIT AUSWERFER; PRESSFORM 150 MIT AUSWERFER; PRESSFORM 75FT MIT AUSWERFER. (PRESSES NO. 88, 150, 75). Hametag, Berlin. Nov 1938. 20f drawings only (Legends in German) Mi $1.75, Enl Pr $5.00. PB 101099

1. Presses - Powder metallurgy - Design - Germany 2. Micro BIOS FD 1142/47, Frames 1-3.

Drawings are numbered 1187, 1226, 1300.

RING-ROLLER TYPE BRIQUETTE PRESS. Krupp, Friedrich, Grusonwerk A. G., Magdeburg, Ger. Jan 1948. 6f photo, drawing Mi $1.25, Enl Pr $2.50. PB 101306

1. Presses, Ring-roll (Krupp) 2. Nordburg Mfg. Co., Milwaukee, Wis. 3. Micro BIOS FD 607/48, Frames 1-5.

Abstract included. Translated by Nordburg Mfg. Co., Milwaukee, Wis.

SOME ASPECTS OF HEAT ABSORPTION BY A GROUND COIL, by Charles H. Coogan, Jr. Connecticut. University. Engineering Experiment Station, Storrs, Conn. Jun 1948. 13p photo, diagrs Available from Engineering Experiment Station, University of Connecticut, Storrs, Conn. PB 101178

1. Pumps, Earth heat.

Bulletin no. 3.

SUMMARY OF HEAT ABSORPTION RATES FOR AN EXPERIMENTAL GROUND COIL SYSTEM, by Charles H. Coogan, Jr. Connecticut. University Engineering Experiment Station, Storrs, Conn. Mar 1949. 7p diagrs, tables Available from Engineering Experiment Station, University of Connecticut, Storrs, Conn. PB 101161

1. Pumps, Earth heat.

Bulletin no. 4.

TOLERANCES. U. S. Bureau of Ships. Apr 1950. 8p photo, diagrs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 101091

1. Tools, Machine - Tolerance 2. Tolerances 3. NAVSHIPS IN 104.

VERSTÄRKUNG DES ZAHNFUSSES BEI KORREGIERTER VERZAHNUNG ZWECKS ERHÖHUNG DER FESTIGKEIT DES ZAHNES. STIRNRÄDER MIT EVULVENTEN-VERZAHNUNG (RE-INFORCEMENT OF BASE OF TEETH IN CORRECTED TEETH CUTTING TO INCREASE THE STRENGTH OF THE TEETH. SPUR-WHEELS WITH INVOLUTED TEETH), by Bornemann. Rheinmetall Borsig A. G., Unterlüss, Ger. 1945. 18f graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 101103

1. Teeth (Machine) - Cutting - Germany 2. Micro BIOS HEC 10761 3. Micro BIOS FD 1805/46, Frames 144-160.

Abstract available as PB 101103s. 1p. Mi $1.25, Ph $1.25.

VERSUCHE ÜBER DAS UMSCHMELZEN VON ZINK IM ELEKTRISCH BEHEIZTEN SALZBADOFEN (EXPERIMENTS ON THE REMELTING OF ZINC IN AN ELEC-

TRICALLY HEATED SALT BATH FURNACE), by Dr. E. Benzing. Metallgesellschaft A. G., Frankfort, Ger. Jan 1930. 19f drawings (Text in German) Mi $1.75, Enl Pr $3.75. PB 100964

1. Furnaces, Tempering - Design - Germany 2. Zinc - Melting - Germany 3. BIOS FR 335 LD 4. Micro BIOS HEC 12018 5. Micro BIOS FD 4828/47, Frames 133-148.

Listed in BIOS FR 335. Abstract available as PB 100964s. 2p. Mi $1.25, Ph $1.25.

VERSUCH ZUR KIESELSÄUREENTFERNUNG ALS WALZENSINTER (EXPERIMENTS ON THE ELIMINATION OF SILICIC-ACID FROM MILL SCALE), by H. Kassner. Metallgesellschaft A. G., Frankfort, Ger. Jun 1940. 16f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110385

1. Silica - Removal from mill scale - Germany 2. BIOS OR 20 LD 3. Micro BIOS HEC 12186 4. Micro BIOS FD 3532/48, Frames 84-98.

Abstract available as PB 110385s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS OR 20 (PB 97432).

VERWENDUNG EINER PASTILLENPRESSE ZUR FORMGEBUNG VON HARTMETALLPLÄTTCHEN (USE OF A TABLET PRESS FOR SHAPING HARD METAL TIPS). Studiengesellschaft Hartmetall, Berlin. Nov 1938. 5f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100960

1. Presses - Powder metallurgy - Germany 2. Tools, Cutting - Carbide tipped - Manufacture - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11155 5. Micro BIOS FD 3793/47, Frames 1-4.

Listed in BIOS FR 925 appx. I, p. 15. Abstract available as PB 100960s. 1p. Mi $1.25, Ph $1.25.

VORBERICHT ÜBER DIE ABNUTZUNG AN ZAHNRADERN AUS BUCHENSCHICHTHOLZ. (WEAR RESISTANCE OF PLY-WOOD COG-WHEELS). Aachen. Technische Hochschule. Laboratorium für Werkzeugmaschinen and Betriebslehre. 1938-1939. 63p diagrs, graphs (Text in German) Mi $3.00, Ph $8.75. PB 110121

1. Tegofilm (Adhesive) 2. Voltol-Gleitöl no. 2 (High-viscous oil) 3. Gears, Spur - Plywood - Tests - Germany 4. Lignofol (Plywood) 5. Aix-la-Chapelle. Technische Hochschule 6. Vacuum-Öl Gesellschaft 7. Goldschmidt, Theodor, A. G., Essen, Ger. 8. Micro BIOS FD 1938/46, Frames 1-63.

Enlargement print of Micro BIOS FD 1938/46, Frames 1-63.

ZEICHNERISCHE ERMITTLUNG DER WANDTEMPERATUREN BEIM WÄRMEDURCHGANG DURCH WÄNDE VON BELIEBIGER FORM. (GRAPHICAL DETERMINATION OF WALL TEMPERATURES FOR HEAT TRANSFERS THROUGH WALLS OF ARBITRARY SHAPE), by Otto Lutz. Apr 1950. 16p diagrs, graphs Mi $1.75, Ph $2.50. PB 100722

A graphical method is given, which permits determination of the temperature distribution during heat transfer through arbitrarily shaped two-dimensional wall. Three examples are presented to illustrate the method. Translated from Zeitschrift des vereines deutscher ingenieure, Band 79, nr. 34, Aug 1935. NACA TM 1280.

ZUR FRAGE DER WIRTSCHAFTLICHE ANWENDUNG VON HARTMETALLEN (ECONOMICAL USE OF HARD METALS). Studiengesellschaft Hartmetall, Berlin. Feb 1938. 5f tables (Text in German) Mi $1.25, Enl Pr $1.50. PB 100972

1. Tools, Cutting - Carbide - Germany 2. Tools, Cutting - Steel - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11129 5. Micro BIOS FD 3782/47, Frames 1-4.

Abstract available as PB 100972s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 13.

ATP-ASE ACTIVITY OF ISOLATED MYOFIBRILS, BY S. V. PERRY (SCHOOL OF BIOCHEMISTRY, UNIVERSITY OF CAMBRIDGE). Jun 1950. 2p Mi $1.25, Ph $1.25. PB 101236

1. Biological chemistry - Research - Gt. Brit. 2. Myofibrils - Gt. Brit. 3. Cambridge. University. School of Biochemistry, Cambridge, Eng.

Extract from preprint of 287th meeting of the Biochemical Society to be held at Cambridge University 17 Jun 1950.

CANCER RESEARCH IN SEVERAL BRITISH AND EUROPEAN LABORATORIES, PREPARED by Dan H. Moore. U. S. Office of Naval Research. London Branch. May 1950. 42p Mi $2.50, Ph $6.25. PB 101191

This report describes some of the investigations which have been either reported at meetings, or in recent literature, or reported directly upon interviews. The specific topics reported cover a wide latitude of approaches as is indicated in the index. ONRL TR 54-50.

CONTROLLING AND REPORTING OF VENEREAL DISEASES IN GERMANY AND GERMAN OCCUPIED COUNTRIES, by Elisabeth Filtzinger. U. S. Field Information Agency, Technical. Jun 1949. 11p Mimeo: $.50. PB 97444

1. Venereal diseases - Germany 2. FIAT FR 1207.

EVALUATION OF PRESENT DAY KNOWLEDGE OF COSMIC RADIATION AT EXTREME ALTITUDE IN TERMS OF THE HAZARD TO HEALTH, by Hermann J. Schaefer. U. S. Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla. Research report. Apr 1950. 31p graphs, tables Mi $2.25, Ph $5.00. PB 110149

The report is divided into following parts: I. Introduction; II. Brief outlining of present-day knowledge of cosmic radiation; III. Conversion of the experimental data into terms of the biological effect; IV. Bibliography, 5 appendices with tables and graphs attached. NMRI Proj. NM 001 059.13.01.

EYE FIXATIONS OF AIRCRAFT PILOTS. IV. FREQUENCY, DURATION AND SEQUENCE OF FIXATIONS DURING ROUTINE INSTRUMENT FLIGHT, by Richard E. Jones, John I. Milton and Paul M. Fitts. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Dec 1949. 34p photos, diagrs, tables Mi $2.25, Ph $5.00. PB 100869

The frequency, duration, and sequence of eye fixations made by 36 USAF pilots when flying five maneuvers frequently performed during routine instrument flight are summarized. There is relatively little variation in the average rate of fixation and in the average length of fixation on specific instruments from maneuver to maneuver. Eye-movement link values between all instruments are presented. AAF TR 5975.

FURTHER INVESTIGATIONS ON THE INJECTIONS OF RESPIRATORY CATALYSTS IN AN ATTEMPT TO IMPROVE HYPOXIA TOLERANCE. STUDIES ON THE IN-

CORPORATION OF INJECTED CYTOCHROME C INTO TISSUE CELLS, by Helmut Beinert, H. Maier-Leibnitz, E. C. Richey, K. R. Reissmann. U. S. Air Force. School of Aviation Medicine. Dept. of Pharmacology and Biochemistry, Randolph Field, Tex. May 1950. 12p tables Mi $1.75, Ph $2.50. PB 110448

The experimental data and results are given followed by a discussion. Tables are given and Bibliography attached. AAF SAM Proj 21-02-054, Report no. 1.

HUMAN EXPOSURES TO LINEAR DECELERATION. I. PRELIMINARY SURVEY OF AFT-FACING SEATED POSITION, by John Paul Stapp. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Jun 1949. 40p photos, graphs, tables Mi $2.25, Ph $5.00. PB 100871

Linear decelerator was used to expose three young healthy males to decelerations from back to chest in a seated position. Two series of decelerations at approximately 5 g increments up to 30 g's were carried out with initial rates of change of deceleration at 500 and 1000 g's per second. Total duration of exposures ranged from .15 to .42 seconds. Subjective accounts of the experiences of each individual are given and oscillographic records of the decelerations on the chest, on the helmet, and on the seat discussed. USAF contract W33-038 ac-16972. AAF TR 5915.

MEASUREMENTS OF THE GAMMA RADIATION DOSES FROM LUMINOUS PAINT ON INSTRUMENT DIALS IN AIRPLANES, by Hermann J. Schaefer. U. S. Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla., and U. S. Bureau of Medicine and Surgery. Project report no. 1. Feb 1950. 15p graphs Mi $1.75, Ph $2.50. PB 110189

A general curve is derived from the measurements and a graphical method described which permits the pre-calculation of the spatial distribution of the gamma radiation dose in the surroundings of any possible instrument grouping. NM 001 059.25.01 (formerly NM 001 052).

METABOLIC FUNCTIONS OF THE KIDNEY, by Dan H. Moore. U. S. Office of Naval Research. London Branch. Apr 1950. 6p graph, tables Mi $1.25, Ph $1.25. PB 110293

By a combination of pancreatectomy, nephrectomy, administration of alloxan and of kidney extract, investigators at the Institute for Medical Research, the University of Madrid, have shown that the kidney functions in carbohydrate metabolism and that the action of the alloxan is not only on the pancreas but also on the kidney. It is also demonstrated that the kidney is essential in regulating both the proteins and lipids of the blood. Graphs and tables included. The graph may not reproduce well. Technical report ONRL-47-50.

OBSERVATIONS ON THE PATHOLOGIC-PHYSIOLOGY IN THE HYPOTHERMIC DOG, by A. H. Hegnauer and K. E. Penrod. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1949. 113p graphs, tables Mi $4.75, Ph $15.00. PB 110070

It is concluded that the fundamental cause of death in hypothermia is a progressive cardiac ischemia resulting from (1) a lengthened (relative) activity portion of the cardiac cycle, (2) a reduced arterial and hence coronary pressure head, and (3) an increased viscosity, followed by a metabolic debt due to failure of restitution of the mechanical and electrical energy which in turn results in fulminating myocardial weakness and failure in ventricular fibrillation. Respiration inadequacy may only serve to hasten the above described process. Graphs and tables included. Biblio-

graphy attached. USAF Contract no. W33-038-ac-14757 (16205). Contains also (1) Haterius, Hans O. and Maison, George L. Experimental hypothermia and rewarming in the dog. Recovery after severe reduction of body temperature. Reprinted from American Journal of Physiology, vol. 152, no. 2, Feb 1948, p. 73-89 (2) Grossman, Milton S. and Penrod, Kenneth E. Relationship of hypothermia to high oxygen poisoning. Reprinted from American Journal of Physiology, vol. 156, no. 2, Feb 1949, p. 90-94. (3) Brokaw, Radford and Penrod, Kenneth E. Bromsulphalein removal rates during hypothermis in the dog. Abstracted in Proc. Federated Societies of Biology, vol. 8, p. 17, 1949, p. 95-102. (4) Penrod, Kenneth E. and Hegnauer, A. H. Effect of pentothal sodium on blood gas transport. Reprinted from American Journal of Physiology, vol. 153, no. 1, Apr 1948, p. 103-108. AAF TR 5912.

OBSTETRICS AND GYNECOLOGY, PART II (FIAT REVIEW OF GERMAN SCIENCE, 1939-1946), by Heinrich Martius and others. 1949. 318p drawings, graphs (Text in German) Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $3.00. PB 101013

1. Obstetrics - Germany 2. Gynaecology - Germany 3. U. S. Field Information Agency, Technical.

For pt. 1 see PB 95690. Title page in English. Tables of contents in English, German and French.

PARANOID SCHIZOPHRENIA, by Karl Kleist, M.D. U. S. Field Information Agency, Technical. Jun 1949. 61p (Text in German) Mimeo: $1.75. PB 97440

1. Dementia praecox - Germany 2. FIAT FR 1257.

Title-page and abstract in English.

REACTION BETWEEN PROTEINS AND GLUCOSE IN DRIED HUMAN BLOOD PLASMA, by C. H. Lea, R. S. Hannan and R. I. N. Greaves. U. S. Embassy, London. Office of the Naval Attache. Jun 1950. 2p Mi $1.25, Ph $1.25. PB 101237

1. Blood plasma - Protein - Effect of glucose - Gt. Brit. 2. Blood plasma - Storage - Gt. Brit.

Extract from preprint of the 287th meeting of the Biochemical Society to be held at Cambridge University 17 Jun 1950.

SOME FACTORS AFFECTING TIME CONSCIOUSNESS AT HIGH ALTITUDES, by Elizabeth Comfort and J. W. Wilson. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Nov 1949. 20p photos, graphs, tables Mi $1.75, Ph $2.50. PB 100919

It has been observed that time of consciousness following oxygen mask removal at a given altitude is considerably longer than the time available following rapid decompression to the same altitude. In view of the importance of the observation in connection with the establishment of safety procedures in pressurized aircraft, a comparison of these two sets of conditions has been made in 6 resting subjects for an altitude range of 25,000 feet to 40,000 feet. These experiments have demonstrated that the time reserve is 28% to 49% longer in the mask removal than in the rapid decompression series. The importance of the "nitrogen-dilution effect" in determining the duration of consciousness of an individual breathing air at high altitude has been indicated by graphic analysis. The validity of the term "time of useful consciousness" has been discussed. Graphs, tables, photos and bibliography given. Date on cover is Feb 1950. AAF TR 5970.

STUDIES IN HUMAN TOLERANCE FOR EXTREME HEAT, SECOND SUMMARY REPORT, by W. V. Blockley and Craig L. Taylor. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Jul 1949. 91p graphs, tables Mi $4.25, Ph $12.50. PB 110069

The work is divided into two phases: (a) submaximal exposures using 26 college students, (b) tolerance exposures of two subjects to a range of humidities and temperatures. Graphs and tables are included. Contract W33-038 ac 14504. For earlier report see PB 96804 (AAF TSEAA MR 696-113A). AAF TR 5831.

ÜBER STÖRUNGEN DER INNEREN SEKRETION NACH BAZILLÄRER RUHR (DISTURBANCES IN INTERNAL SECRETION FOLLOWING BACILLAR DYSENTERY), by Dr. Albert Herrlich. U. S. Field Information Agency, Technical. Jun 1949. 46p photos, graphs (Text in German) Mi $2.50, Ph $6.25, Mimeo: $1.25. PB 97443

1. Dysentery, Bacillary - Germany 2. Metabolism - Germany 3. FIAT FR 1254.

METALS AND METAL PRODUCTS

CORROSION TESTS ON SINTERED PROJECTILES FROM IRON POWDER. Metallgesellschaft A. G., Frankfort, Ger. 1944. 4f photos (Text in German) Mi $1.25, Enl Pr $1.50. PB 101109

1. Projectiles - Corrosion tests - Germany 2. Zinc powders - Uses - Germany 3. Micro BIOS FD 1312/46, Frames 1-3.

Abstract available as PB 101109s. 2p. Mi $1.25, Ph $1.25.

CRYSTALLINE STRUCTURE OF HARD METALS IN RELATION TO SINTERING TEMPERATURE. Studiengesellschaft Hartmetall, Berlin. Aug-Dec 1941. 19f photos, graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 100969

1. Metals, Hard - Structure - Germany 2. Metals, Hard - Sintering - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11328 5. Micro BIOS HEC 11334 6. Micro BIOS HEC 11350 7. Micro BIOS FD 3902/47, Frames 1-17.

Abstract available as PB 100969s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 32 and 34.

DETAILS OF THE FISCHER-TROPSCH SYNTHESIS. Ruhrchemie A. G., Oberhausen-Holten, Ger. 1935-1944. 135f drawings, graphs (Text in German) Mi $4.75, Enl Pr $16.25. PB 101060

1. Fischer-Tropsch process 2. Metals - Corrosion - Germany 3. Micro BIOS FD 62/48, Frames 1-118.

Abstract available as PB 101060s. 1p. Mi $1.25, Ph $1.25. Some frames will not reproduce well.

DEVELOPMENT OF AN ALUMINUM ALLOY FOR ELEVATED TEMPERATURE SERVICE, by J. C. McGee. U. S. Air Materiel Command. Engineering Division. Materials Laboratory, Wright Field, Dayton, Ohio. Jun 1947. 22p photos, graphs, tables Mi $2.00, Ph $3.75. PB 101144

1. Aluminum alloys, High temperature 2. AAF TSEAM M5306 3. AAF TR 5603.

EXTRACTS FROM LECTURES GIVEN AT THE DEUTSCHE GESELLSCHAFT FÜR METALLKUNDE AND SUGGESTIONS FOR HARD METAL RESEARCH PROGRAMME.

Studiengesellschaft Hartmetall, Berlin. 1938. 6f (Text in German) Mi $1.25, Enl Pr $2.50. PB 110416
1. Metals, Hard - Research - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11137 4. Micro BIOS FD 3787/47, Frames 1-5.
Abstract available as PB 110416s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 13.

FORMGEBUNG VON HARTMETALLEN OHNE VORSINTERUNG BEI 900° IM WASSERSTOFFSTROM (SHAPING OF HARD METAL AT 900° C IN HYDROGEN WITHOUT PRESINTERING), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jun 1938. 4f tables (Text in German) Mi $1.25, Enl Pr $1.50. PB 110415
1. Metals, Hard - Fabrication - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11136 4. Micro BIOS FD 3786/47, Frames 1-3.
Abstract available as PB 110415s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 13.

GEWINNUNG VON EISENPULVER (PRODUCTION OF IRON POWDER BY ELECTROLYTICAL PROCESSES), by Drs. Haensel and Wendel. Siemens & Halske A. G., Berlin. 1942. 20f photos, drawings, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110369
1. Iron powders - Manufacture - Germany 2. BIOS FR 1569 LD 3. Micro BIOS FD 461/48, Frames 1-20.
Abstract available as PB 110369s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 1569 appx. XI, p. 49.

LEGIERUNGEN AUS FE+50% WC UND FE+50% W_2C MIT CHROMZUSATZ, TANTALUMZUSATZ, TITANZUSATZ, VANADINZUSATZ (ALLOYS OF FE AND 50% WC AND FE+50% W_2C WITH ADDITION OF CHROMIUM, OF TANTALUM, TITANIUM, VANADIUM CARBIDE, AND WITH DIFFERENT ADDITIONS). Studiengesellschaft Hartmetall, Berlin. Feb 1941-Dec 1941. 80f photos, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110405
1. Iron alloys - Germany 2. Iron-tungsten-carbon alloys - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11284 5. Micro BIOS HEC 11299 6. Micro BIOS HEC 11302 7. Micro BIOS HEC 11312 8. Micro BIOS HEC 11315 9. Micro BIOS HEC 11319 10. Micro BIOS HEC 11337 11. Micro BIOS HEC 11351 12. Micro BIOS HEC 11353 13. Micro BIOS FD 3905/47, Frames 1-80.
Listed in BIOS FR 925 appx. I, p. 27,29-32,34.

METALLOGRAPHISCHE PRÜFUNG AN STAHLSPÄNEN NACH DEM ABDREHEN MIT XX-SCHNEIDEN (METALLOGRAPHIC EXAMINATION OF CHIPS CUT WITH XX TOOL TIPS). Studiengesellschaft Hartmetall, Berlin. Jun-Jul 1940. 9f photos (Text in German) Mi $1.25, Enl Pr $2.50. PB 110402
1. Steel - Metallography - Germany 2. Tools, Cutting - Hard facing - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11227 5. Micro BIOS HEC 11221 6. Micro BIOS FD 3836/47, Frames 1-9.

METALLOGRAPHISCHE UNTERSUCHUNG VON 4 KERNEN (METALLOGRAPHIC EXAMINATION OF FOUR CORES); GEFÜGEBESCHAFFENHEIT VON KERNEN AUS B.V. I UND B.V. II MISCHUNGEN DES WIDIA BETRIEBS (STRUCTURES OF CORES MADE FROM BV I AND BV II MIXTURES AT THE WIDIA FACTORY); GEFÜGEUNTERSUCHUNG AN B.V. I UND B.V. II KERNEN, FABRIKATION KRUPP (STRUC-

TURES OF BV I AND BV II CORES MADE BY KRUPP). Studiengesellschaft Hartmetall, Berlin. 1940. 17f photos (Text in German) Mi $1.75, Enl Pr $3.75. PB 110024

1. Cores, Hard cemented carbide - Germany 2. BV I (Hard metal) 3. BV II (Hard metal) 4. BIOS FR 925 LD 5. Micro BIOS HEC 11203 6. Micro BIOS HEC 11205 7. Micro BIOS HEC 11216 8. Micro BIOS FD 3827/47, Frames 1-15.

Abstract available as PB 110024s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925, p. 19 and 21.

PHOTOMETRISCHE WOLFRAMBESTIMMUNG MIT KALIUMRHODANID UND ZINN (II)-CHLORID ODER TITAN (III)-CHLORID (PHOTOMETRIC DETERMINATION OF TUNGSTEN WITH THE AID OF POTASSIUM SULFOCYANATE AND TIN (II)-TETRACHLORIDE OR TITANIUM (III)-CHLORIDE), by Benedikt Mader. Verein Deutscher Eisenhüttenleute, Düsseldorf, Ger. Jul 1943. 8f graphs (Text in German) Mi $1.25, Enl Pr $2.50. PB 110164

1. Tungsten - Determination - Germany 2. Pulfrich photometer 3. Micro BIOS FD 1725/49, Frames 1-6.

Abstract available as PB 110164s. 1p. Mi $1.25, Ph $1.25.

PRESSVERSUCHE MIT WOLFRAM-RUSS-MISCHUNGEN (PRESSING EXPERIMENTS WITH MIXTURES OF TUNGSTEN AND CARBON-BLACK), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Oct 1937. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 110399

1. Tungsten-carbon-black alloys - Formation - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 1116 4. Micro BIOS FD 3776/47, Frames 1-3.

English abstract included. Listed in BIOS FR 925 appx. I, p. 11.

REPORTS ON THE DEVELOPMENT AND USE OF SINTER MATERIALS BASED ON IRON-ALUMINUM OXIDE, by G. Ritzau. 1946. 13f drawing, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110162

1. Iron oxides - Use in sintering - Germany 2. Sintering - Germany 3. Micro GDC 1888T 4. Micro GDC 1890T 5. Micro GDC 1891T 6. Micro GDC 1889T 7. Micro BIOS FD 522/48, Frames 1-11..

Abstract available as PB 110162s. 2p. Mi $1.25, Ph $1.25.

SAVING OF MANGANESE IN STEEL PRODUCTION. Verein Deutscher Eisenhüttenleute, Düsseldorf, Ger. 1934-1942. 329f photos, diagrs, graphs, tables (Text in German) Mi $9.00, Enl Pr $43.75. PB 110154

1. Manganese - Conservation - Germany 2. Micro BIOS FD 1865/49, Frames 1-321.

English abstract included. Abstract available as PB 110154s. 5p. Mi $1.25, Ph $1.25. See also FD 3370/47 (PB 95612) and FD 3372/47 (PB 95619).

SINTERED MIXTURES OF METALS AND OXIDES, REPORTED BY R. L. BICKERDIKE AND N.H.G. DANIELS. BRITISH INTELLIGENCE OBJECTIVES SUBCOMMITTEE. B.I.O.S. TRIP NO. 1779. Jan 1946. 6p table Mi $1.25, Ph $1.25. PB 101149

1. Metals, Sintered - Germany 2. BIOS FR 1471.

STRESS-STRAIN AND ELONGATION GRAPHS FOR ALCLAD ALUMINUM-ALLOY, 24S-T86 SHEET, by James A. Miller. U. S. National Advisory Committee for Aeronautics. May 1950. 30p graphs, tables Mi $2.00, Ph $3.75. PB 110234

Results of tests on duplicate longitudinal and transverse specimens of Alclad aluminum-alloy 24S-T86 sheets with nominal thicknesses of 0.032, 0.064, and 0.125 inch are presented in the form of graphs. Tensile and compressive stress-strain graphs and stress-deviation graphs to a strain of about 1 percent are plotted on a dimensionless basis. Stress-strain graphs and graphs of local elongation and of elongation against gage length are also included for tensile specimens tested to fracture. NACA TN 2094.

TANTALUM AND ITS COMPOUNDS, by R. E. Alexander and M. C. Sanz. North American Aviation, Inc. Los Angeles, Cal. May 1947. 8p graphs Mi $1.25, Ph $1.25. PB 99533

Description is made of the mechanical, chemical, and physical properties of tantalum. Two oxides and two carbides are formed by the element. At about 759°C, large amounts of hydrogen are absorbed; and at about 1200°C, the metal forms tantalum hydride. By burning the element in chlorine at about 250°C, tantalum chloride can be produced.

TENSILE PROPERTIES OF MG-AL AND MG-AL-ZN SAND CASTING ALLOYS. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 1943. 15f graphs (Text in German and English) Mi $1.75, Enl Pr $3.75. PB 110155

1. Magnesium-aluminum alloys - Germany 2. Magnesium-aluminum-zinc alloys - Germany 3. Micro BIOS FD 1983/49, Frames 1-7+7.

Abstract available as PB 110155s. 1p. Mi $1.25, Ph $1.25.

ÜBER DAS SINTERUNGSVERHALTEN VON HARTMETALL XX, UND VON KOBALT-PULVER (SINTERING BEHAVIOR OF XX HARD METAL AND OF COBALT POWDER). Studiengesellschaft Hartmetall, Berlin. Jul-Oct 1938. 18f photos, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110226

1. Metals, Hard - Sintering - Germany 2. Cobalt powders - Sintering - Germany 3. XX (Hard metal) 4. BIOS FR 925 LD 5. Micro BIOS HEC 11138 6. Micro BIOS HEC 11148 7. Micro BIOS FD 3791/47, Frames 1-14.

English abstract included. Abstract available as PB 110226s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 13-14.

UEBER DEN EINFLUSS EINES SILBER-BZW. SILBERBEHALTIGEN HILFSMETALLS AUF DIE VERSINTERUNG DES HARTMETALLS (INFLUENCE OF SILVER OR SILVER BEARING BINDERS ON THE SINTERING OF HARD METAL). Studiengesellschaft Hartmetall, Berlin. Apr 1942. 9f graphs (Text in German) Mi $1.25, Ph $2.50. PB 110406

1. Binding agents, Silver - Germany 2. Metals, Hard - Sintering - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11365 5. Micro BIOS FD 3911/47, Frames 1-9.

Listed in BIOS FR 925 appx. I, p. 35.

UBER VERSUCHE MIT CA-HALTIGEN AM 503 (EXPERIMENTS WITH CALCIUM-CONTAINING AM 503 LIGHT METAL ALLOY), by E. Mohr. I. G. Farbenindustrie A. G., Bitterfeld, Ger. 1939. 13f photos, graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 110180

1. AM 503 (Magnesium-maganese alloy) 2. Magnesium-manganese alloys - Germany 3. BIOS OR 23 LD 4. Micro BIOS HEC 10163 5. Micro BIOS FD 2004/49, Frames 1-12.

Abstract available as PB 110180s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS OR 23, p. 85.

VERTEILUNG DER WOLFRAM-MENGEN IM SCHLEIFSTAUB DER HARTMETALL-WERKZUG-SCHLEIFEREIEN (RECOVERY OF TUNGSTEN FROM SILICON CARBIDE GRINDING DUST), by Erich Dinglinger. n.d. 13f drawings (Text in German) Mi $1.75, Enl Pr $3.75. PB 110195

1. Tungsten - Recovery - Germany 2. Micro BIOS FD 2451/48, Frames 1-9.

Abstract available as PB 110195s. 1p. Mi $1.25, Ph $1.25.

VERSUCHE MIT VERSCHIEDENEN HARTMETALLSORTEN BEIM ABDREHEN VON MIT ALUMINIUM VERGOSSENEN ANKERN (TESTS WITH DIFFERENT TYPES OF HARD METAL), by Herr Schröter. Studiengesellschaft Hartmetall, Berlin. Dec 1938. 4f drawing (Text in German) Mi $1.25, Enl Pr $1.50. PB 110401

1. Metals, Hard - Tests - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11161 4. Micro BIOS FD 3796/47, Frames 1-4.

Listed in BIOS FR 925 appx. I, p. 15.

VULNERABILITY OF METAL AIRCRAFT STRUCTURES, by R. W. Brown. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jan 1944. 19p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 110248

Report presents a review of all available information relevant to the study of the vulnerability of metal aircraft structures and on the basis of present operational conditions, indicates those types of structure likely to possess minimum vulnerability in the future. It is concluded that from the vulnerability viewpoint, the 1943 form of geodetic construction is likely to be of most value. As a "second best" in other types, the stressed-skin form of construction with heavy stringers is favoured. Cover date is 1950. ARC RM 2299.

ZERKLEINERUNG VON WIDIASCHROTT IN DER ZENTRIFUGALMÜHLE (CRUSHING OF "WIDIA" SCRAP IN A CENTRIFUGAL MILL). Studiengesellschaft Hartmetall, Berlin. Mar 1939. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 100973

1. Scrap metal - Recovery processes - Germany 2. Centrifuging - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11174 5. Micro BIOS FD 3807/47, Frames 1-2.

Abstract available as PB 100973s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 16.

ZUR FRAGE DER STRUKTUR DES NICKELCARBIDES NI_3C (STRUCTURE OF THE NICKEL CARBIDE NI_3C), by Kohlhaas. Studiengesellschaft Hartmetall, Berlin. Apr 1938. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 110400

1. Nickel carbide - Structure - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11134 4. Micro BIOS FD 3784/47, Frames 1-2.

English abstract included. Extract from article published in Angewandte chemie, v. 51, no. 12, p. 179 (1938). Listed in BIOS FR 925 appx. I, p. 13.

MINERALS AND MINERAL PRODUCTS

CERAMIC TRANSFERS; INTERROGATION OF HERR FRITZ HANKE ON FEB 23D, 1948. REPORTED by D. A. Holdridge. British Intelligence Objectives Subcommittee. 1948. 6f Mi $1.25, Enl Pr $2.50. PB 101054
1. Ceramics - Lithography - Germany 2. BIOS IR 837 5. Micro BIOS FD 1172/49, Frames 1-5.
For details of process see BIOS FR 1315, p. 33. Abstract available as PB 101054s. 1p. Mi $1.25, Ph $1.25.

FERROMAGNETIC RESONANCE ABSORPTION IN MAGNETITE SINGLE CRYSTALS, by L. R. Bickford, Jr. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Oct 1949. 60p photos, drawings, graphs, tables Mi $2.75, Ph $7.50. PB 110314
1. Crystals, Magnetite 2. Magnetite - Crystal structure 3. Absorption, Ferromagnetic 4. MIT LIR TR 23.
O.N.R. Contract N5 ori-07801.

GLOSSARY OF URANIUM-AND THORIUM-BEARING MINERALS, by Judith Weiss Frondel and Michael Fleischer. U. S. Geological Survey. Apr 1950. 20p. Available free from Director, Geological Survey, U. S. Dept. of Interior, Washington 25, D. C. PB 110323
This glossary is an alphabetical listing of all known uranium- and thorium-bearing minerals. The chemical formula, percentage of uranium or thorium, and a literature reference is given for each mineral. GS C74.

LINING OF VESSELS WITH FERRO-SILICON PLATES; SPECIAL ASPLIT CEMENT FOR FILLING THE JOINTS, by K. Frank. I. G. Farbenindustrie A. G., Höchst, Ger. May 1947. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 101333
1. Cements, Acid resistant - Germany 2. Liners, Ferro-silicon - Germany 3. BIOS FR 1055 supplement 4. Micro BIOS FD 1376/49, Frames 1-3.
English abstract included. Supplement to report by K. Frank translated in BIOS FR 1055, p. 28-37.

NAGRA IAKTTAGELSER ÖVER NORRBOTTENS JÄRNVERK A. -B:S SLAGG. GÄSTFÖRELÄSNING HALLEN VID CHALMERS TEKNISKA HÖGSKOLA, GÖTEBORG, 10 DEC 1948. (USE OF BLAST FURNACE SLAG), av Yrjö Kauko. Chalmers University of Technology, Gothenburg, Sweden. 1949. 11p diagr, graphs, table (Text in Swedish) Mi $1.75, Ph $2.50. PB 110073
1. Slag, Blast furnace - Uses - Sweden 2. Ashes - Uses - Sweden 3. Norrbottens Jarnverk A.-B 4. Chalmers University of Technology, Gothenberg, Sweden. Transactions no. 91.
Abstract in English. Transactions 91. (Institutionen för Silikatkemisk Forskning 21).

PHASE DIAGRAM OF THE BAO-TiO_2 SYSTEM, by W. O. Statton. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Apr 1950. 38p photos, drawing, graphs, table Mi $2.25, Ph $5.00. PB 110318
1. Barium oxide 2. Titanium dioxide 3. Phase diagrams 5. MIT LIR TR 31.
O.N.R. Contract N5 ori-07801.

PRODUCTION OF DIAMOND POWDERS. Winter, Ernst & Sohn, Hamburg, Ger. 1946-1947. 21f photos, drawings (Legends in German) Mi $2.00, Enl Pr $5.00. PB 101057

1. Diamond powders - Manufacture - Germany 2. Micro BIOS FD 1751/48, Frames 1-9.

Abstract available as PB 101057s. 1p. Mi $1.25, Ph $1.25.

STANDARDS OF DESIGN FOR CONCRETE, by Ben Moreell. U. S. Bureau of Yards and Docks. 1930. 222p diagrs, drawings, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D.C. $.65. PB 110329

1. Concrete - Specifications 2. NAVDOCKS Spec 3Yb 3. NAVDOCKS Spec 3Yb add. 1A.

NAVDOCKS Specification 3Yb dated Nov 15, 1949. Supersedes no. 3Ya, May 15, 1924. Includes Addendum no. 1A, Jul 1945, superseding addendum no. 1 to 3Ya.

STRUCTURE AND CONDUCTIVITY IN THE VI_B GROUP OF THE PERIODIC SYSTEM, by A. von Hippel. Massachusetts Institute of Technology. Laboratory for Insulation Research, Cambridge, Mass. Dec 1947. 27p photo, drawings, graphs Mi $2.00, Ph $3.75. PB 110301

1. Molecular structures 2. Selenium - Conductivity 3. Selenium - Structure 4. MIT LIR TR 8.

O.N.R. Contract N5 ori-78, T.O.1.

TANTALUM AND ITS COMPOUNDS, by R. E. Alexander and M. C. Sanz. North American Aviation, Inc., Los Angeles, Calif. May 1947. 8p graphs Mi $1.25, Ph $1.25. PB 99533

1. Tantalum.

Report no. AL no. 151.

UNTERSUCHUNG VON ISOLIERUNGEN AUS SCHLACKENROLLE UND GLASWATTE (INVESTIGATION OF INSULATORS MADE OF SLAG WOOL AND GLASS WOOL), by Ing. Schenker. I. G. Farbenindustrie A. G., Oppau, Ger. Jul 1941. 12f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 100971

1. Insulating materials - Tests - Germany 2. Glass wool - Thermal properties - Germany 3. Slag wool - Thermal properties - Germany 4. ZWB KB 11 5. Micro BIOS FD 2867/46, Item no. 2, Frames 1-11.

Abstract available as PB 100971s. 1p. Mi $1.25, Ph $1.25.

USE OF AIR-ENTRAINED CONCRETE IN PAVEMENTS AND BRIDGES. U. S. Highway Research Board. May 1950. 73p Available from Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C. $.45. PB 101213

An up to date discussion of all phases of the air entrained concrete, its advantages, methods of preparing, air entraining agents, and tentative A.S.T.M. texting methods. Current road problems no. 13-R, revised edition "References to the literature on air entrainment:" p. 63-74.

ORDNANCE AND ACCESSORIES

REPORT OF EXAMINATION AND TEST OF THE GERMAN STEERING GYRO (STEUERKREISEL), by Henry Friedman. U. S. Air Materiel Command, Wright

Field, Dayton, Ohio. Jun 1947. 17p photos, diagr, graph Mi $1.75, Ph $2.50. PB 100418

1. Bombs, Glider - Gyros - Germany 2. Gyros, Directional - Germany 3. Gyros, Directional - Tests 4. Fritz X (Glide bomb) 5. Maxson, W. L., Corp., New York, N. Y. 6. AAF TR 1147.

Report compiled by W. L. Maxson Corp., New York under Contract W-33-038-ac-14787.

PAPER AND ALLIED PRODUCTS

EFFECT OF PHENOLIC RESINS ON PHYSICAL PROPERTIES OF KRAFT PAPER, by Parker S. Baird, Robert J. Seidl, Donald J. Fahey. U. S. Forest Products Laboratory, Madison, Wis. Sep 1949. 28p photos, graphs, tables Available from U. S. Forest Products Laboratory, Madison 5, Wis. PB 100350

1. Paper, Kraft 2. Resins, Phenolic - Effect on paper 3. FPL 1750.

Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Portland, Oregon, Sep 11-15, 1949.

EXPERT OPINIONS ON PATENTS CONNECTED WITH THE PRODUCTION OF PAPER AND CARDBOARD ON LONG SCREEN MACHINES, AND A METHOD FOR RECORDING THE AMOUNT OF LIQUID OR SUBSTANCE USED ON WETTING MACHINES. REPORT ON THE UTILIZATION OF "VOHLIT" PAPER WASTE. Darmstadt. Technische Hochschule. Institut für Papierfabrikation. 1940-1943. 8f (Text in German) Mi $1.25, Enl Pr $2.50. PB 110017

1. Paper - Manufacture - Patents - Germany 2. Paper making machinery - Germany 3. Waste - Utilization - Germany 4. Vohlit (Trade name) 5. Micro BIOS FD 949/48, Frames 1-14.

Abstract available as PB 110017s. 2p. Mi $1.25, Ph $1.25.

PHOTOGRAPHIC AND OPTICAL GOODS

DIE FABRIKATION DES "OZAPHAN" FILMS (MANUFACTURE OF OZAPHAN 16 MM. FILM). Kalle & Co., Wiesbaden, Ger. 1947. 4f (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 100761

1. Films (Photography), Motion picture - Germany 2. Ozaphan (Photographic film) 3. Micro BIOS FD 1359/49, Frames 1-3.

Abstract available as PB 100761s. 1p. Mi $1.25, Ph $1.25.

IRIS DIAPHRAGM CAMERA SHUTTERS. Deckel, Friedrich, Munich, Ger. 1935-1946. 256f drawings only (Legends in German) Mi $9.00, Enl Pr $35.00. PB 101110

1. Cameras - Shutters - Germany 2. Micro BIOS FD 1830/47, Frames 1-20+42.

Abstract available as PB 101110s. 1p. Mi $1.25, Ph $1.25.

PHOTOGRAPHS OF SPRAYS FROM PRESSURE JETS, by A. Simons and C. R. Goffe. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1946. 13p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90. PB 101255

1. Photography, Flash - Gt. Brit. 2. Fuels - Injection - Photography - Gt. Brit. 3. Nozzles, Jet - Gt. Brit. 4. ARC RM 2343.
Cover date is 1950. S.O. Code no. 23-2343.

PHYSICS

General

CALCULATIONS OF PROBABILITY TABLES FOR NEW MULTIVARIATE TESTS. HIGH SPEED SELECTION OF VALUES OF CHANCE QUANTITIES, by D. F. Votaw, Jr. and J. A. Rafferty. U. S. Air Force. School of Aviation Medicine. Dept. of Biometrics, Randolph Field, Tex. Apr 1950. 5p Mi $1.25, Ph $1.25. PB 110447
1. Medicine, Aviation - Statistics 2. Mathematics, Applied - Aeromedicine 3. Biometry 4. HSSM (High speed sampling machine) 5. AAF SAM Proj 21-02-033, Report no. 3.

EFFECT OF REYNOLDS NUMBER IN TURBULENT-FLOW RANGE ON FLAME SPEEDS OF BUNSEN BURNER FLAMES, by Lowell M. Bollinger and David T. Williams. U. S. National Advisory Committee for Aeronautics. 1949. 9p photos, diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110343
The effect of flow conditions on the geometry of the turbulent Bunsen flame was investigated. Turbulent flame speed is defined in terms of flame geometry and data are presented showing the effect of Reynolds number of flow in the range of 3000 to 35,000 on flame speed for burner diameters from 1/4 to 1 1/8 inches and three fuels-acetylene, ethylene, and propane. The normal flame speed of an explosive mixture was shown to be an important factor in determining its turbulent flame speed, and it was deduced from the data that turbulent flame speed is a function of both the Reynolds number of the turbulent flow in the burner tube and of the tube diameter. NACA 932.

SURVEY OF PHYSICAL RESEARCH WORK; APPLICATION OF ULTRA-VIOLET ABSORPTION IN THE CONSTITUTIONAL ANALYSIS OF ORGANIC SUBSTANCES; ANALYSIS OF ORGANIC MIXTURES BY MEANS OF RAMAN SPECTRA. I. G. Farbenindustrie A. G., Oppau, Ger. 1943. 16f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101305
1. Physics - Research - Germany 2. Chemical compounds, Organic - Analysis - Germany 3. Spectroscopy, Ultraviolet - Germany 4. Spectroscopy - Raman effect - Germany 4. Micro BIOS FD 604/48, Frames 25000-1234-47.
English abstract included.

UNTERSUCHUNGEN ÜBER DIE WANDSCHUBSPANNUNG IN TURBULENTEN REIBUNGSSCHICHTEN. (INVESTIGATIONS OF THE WALL-SHEARING STRESS IN TURBULENT BOUNDARY LAYERS), by H. Ludwieg and W. Tillmann. May 1950. 25p graphs Mi $2.00, Ph $3.75. PB 110137
The law for the variation of velocity with distance from the surface for the portion of the turbulent boundary layer near the surface is found to be independent of the distribution of pressure over the surface. By making use of the general law for the velocity variation, a formula for the local friction coefficient is derived that takes

into account the boundary layer velocity profile as well as the boundary layer Reynolds number. The derived relation between the local friction coefficient, the boundary layer Reynolds number, and the velocity profile shape parameter is verified by comparison with experimental results. The surface friction measured in flows in which the pressure drops is found to be larger and that measured in flows in which the pressure rises, smaller than that in flows with constant pressure. NACA TM 1285.

Nuclear

ANALYTICAL METHOD FOR DETERMINING TRANSMISSION AND ABSORPTION OF TIME-DEPENDENT RADIATION THROUGH THICK ABSORBERS. III. ABSORBER WITH RADIOACTIVE DAUGHTER PRODUCTS, by G. Allen. U. S. National Advisory Committee for Aeronautics. Jun 1950. 17p diagrs, tables Mi $1.75, Ph $2.50. PB 110352

A theoretical treatment of absorption problems is presented in which multistep decay of induced radioactive isotopes is considered as well as the effect of radiations from the absorber on the time-dependency of the source. NACA TN 2108.

RUBBER AND RUBBER PRODUCTS

BUNA S III. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 22p (Text in German) Mi $2.00, Enl Pr $5.00. PB 101008

1. Buna S III (Trade name) 2. Rubber, Buna - Storage - Germany 3. Rubber, Buna - Tests - Germany 4. Micro BIOS FD 2241/47, Frames 1-20.

English abstract included.

ERSATZ DER FETTSÄUREN IM BUNA-POLYMERISATIONSANSATZ DURCH SYNTHETISCHE SÄUREN (SUBSTITUTION OF SYNTHETIC ACIDS FOR FATTY ACIDS IN THE POLYMERISATION OF BUNA). REPORT PREPARED BY DR. KLEIN FOR THE 9TH MEETING OF THE KAUTEKO, 15 DEC 1942. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942. 13f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110381

1. Rubber, Buna - Polymerization - Germany 2. Fatty acids - Substitutes - Germany 3. KAUTEKO (Anwendung technische Kommission für Kautschuk) 4. Micro BIOS DOCS 2578/3306 5. Micro BIOS FD 1472/48, Frames 1-12.

Abstract available as PB 110381s. 1p. Mi $1.25, Ph $1.25.

KUTEKO CIRCULAR LETTERS RELATING TO ANILINE FORMALDEHYDE RESIN PRODUCTS "IGANIL". I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1933-1943. 71f tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110228

1. Iganil (Trade name) 2. Resins, Aniline - Production - Germany 3. KUTEKO (Kunstoff Technische Kommission) 4. Micro BIOS FD 1878/49, Frames 1-69.

Abstract available as PB 110228s. 2p. Mi $1.25, Ph $1.25.

METHODE ZUR DYNAMISCHEN PRÜFUNG VON SCHWEISS- UND HAFTVERBÄNDEN (DYNAMICAL TESTING METHOD FOR WELDED AND ADHESIVE BONDS), by Huth. I. G. Farbenindustrie A. G., Schkopau, Ger. Jun 1940. 12f photos, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110379

1. Rubber, Synthetic - Adhesive properties - Germany 2. Rubber, Synthetic - Welding properties - Germany 3. Micro BIOS FD 1328/48, Frames 1-11.
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POLYMERIZATION OF BUTADIENE AND ITS HOMOLOGUES), by Dr. R. Meyer. I.G. Farbenindustrie A. G., Schkopau, Ger. 1941-1943. 77f graphs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110377
1. Butadiene - Polymerization - Germany 2. Micro BIOS FD 2214/47, Frames 1-75.

POLYMERIZATION OF LINOLOIC ACID-FREE BUNA S. I. G. Farbenindustrie A. G., Leverkusen, Ger. Aug 1942. 13f (Text in German) Mi $1.75, Enl Pr $3.75. PB 110412
1. Rubber, Buna - Polymerization - Germany 2. Buna S (Trade name) 3. Micro BIOS FD 2395/47, Frames 1-12.
English abstract included.

DAS PROBLEM DER STANDARDISIERUNG VON BUNA S (PROBLEM OF STANDARDIZING BUNA S), by Dr. Weinbrenner. Buna Werke G.m.b.H., Schkopau, Ger. Dec 1942. 49f photos, graphs (Text in German) Mi $2.50, Enl Pr $7.50. PB 110410
1. Buna S (Trade name) 2. Rubber, Buna - Standardization - Germany 3. Micro BIOS FD 2219/47, Frames 1-48.
English abstract included.

STRUCTURAL ENGINEERING

BRICKLAYING IN COLD WEATHER. Gt. Brit. Ministry of Works. 1950. 5p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110266
1. Bricklaying - Gt. Brit. 2. Bricklaying in cold weather 3. MOW AL 8.

CAVITY PARTY WALL CONSTRUCTION FOR SOUND INSULATION. Gt. Brit. Ministry of Works. 1949. 3p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110267
1. Walls - Insulation - Gt. Brit. 2. Walls, Double - Gt. Brit. 3. Insulation, Sound - Buildings - Gt. Brit. 4. MOW AL 4.

INVESTIGATIONS ON BUILDING FIRES. PART I: ESTIMATION OF THE MAXIMUM TEMPERATURE ATTAINED IN BUILDING FIRES FROM EXAMINATION OF THE DEBRIS, BY T. W. PARKER, AND R. W. NURSE. PART II: VISIBLE CHANGES IN CONCRETE OR MORTAR EXPOSED TO HIGH TEMPERATURES, BY G. E. BESSEY. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1950. 27p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 110264
Part I of this paper deals with the means of estimating the temperatures attained in the fire itself from examination of small pieces of metal, glass and other materials found in the debris after the fire. Part II describes work carried out to determine to what extent observed changes in concrete or mortar exposed to high temperatures were critical and also the temperatures at which they occurred. DSIR NB TP 4.

into account the boundary layer velocity profile as well as the boundary layer Reynolds number. The derived relation between the local friction coefficient, the boundary layer Reynolds number, and the velocity profile shape parameter is verified by comparison with experimental results. The surface friction measured in flows in which the pressure drops is found to be larger and that measured in flows in which the pressure rises, smaller than that in flows with constant pressure. NACA TM 1285.

Nuclear

ANALYTICAL METHOD FOR DETERMINING TRANSMISSION AND ABSORPTION OF TIME-DEPENDENT RADIATION THROUGH THICK ABSORBERS. III. ABSORBER WITH RADIOACTIVE DAUGHTER PRODUCTS, by G. Allen. U. S. National Advisory Committee for Aeronautics. Jun 1950. 17p diagrs, tables Mi $1.75, Ph $2.50. PB 110352

A theoretical treatment of absorption problems is presented in which multistep decay of induced radioactive isotopes is considered as well as the effect of radiations from the absorber on the time-dependency of the source. NACA TN 2108.

RUBBER AND RUBBER PRODUCTS

BUNA S III. I. G. Farbenindustrie A. G., Schkopau, Ger. 1943-1944. 22p (Text in German) Mi $2.00, Enl Pr $5.00. PB 101008

1. Buna S III (Trade name) 2. Rubber, Buna - Storage - Germany 3. Rubber, Buna - Tests - Germany 4. Micro BIOS FD 2241/47, Frames 1-20.

English abstract included.

ERSATZ DER FETTSÄUREN IM BUNA-POLYMERISATIONSANSATZ DURCH SYNTHETISCHE SÄUREN (SUBSTITUTION OF SYNTHETIC ACIDS FOR FATTY ACIDS IN THE POLYMERISATION OF BUNA). REPORT PREPARED BY DR. KLEIN FOR THE 9TH MEETING OF THE KAUTEKO, 15 DEC 1942. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942. 13f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 110381

1. Rubber, Buna - Polymerization - Germany 2. Fatty acids - Substitutes - Germany 3. KAUTEKO (Anwendung technische Kommission für Kautschuk) 4. Micro BIOS DOCS 2578/3306 5. Micro BIOS FD 1472/48, Frames 1-12.

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KUTEKO CIRCULAR LETTERS RELATING TO ANILINE FORMALDEHYDE RESIN PRODUCTS "IGANIL". I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1933-1943. 71f tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 110228

1. Iganil (Trade name) 2. Resins, Aniline - Production - Germany 3. KUTEKO (Kunstoff Technische Kommission) 4. Micro BIOS FD 1878/49, Frames 1-69.

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1. Rubber, Synthetic - Adhesive properties - Germany 2. Rubber, Synthetic - Welding properties - Germany 3. Micro BIOS FD 1328/48, Frames 1-11.
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1. Rubber, Buna - Polymerization - Germany 2. Buna S (Trade name) 3. Micro BIOS FD 2395/47, Frames 1-12.
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DAS PROBLEM DER STANDARDISIERUNG VON BUNA S (PROBLEM OF STANDARDIZING BUNA S), by Dr. Weinbrenner. Buna Werke G.m.b.H., Schkopau, Ger. Dec 1942. 49f photos, graphs (Text in German) Mi $2.50, Enl Pr $7.50. PB 110410
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English abstract included.

STRUCTURAL ENGINEERING

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1. Bricklaying - Gt. Brit. 2. Bricklaying in cold weather 3. MOW AL 8.

CAVITY PARTY WALL CONSTRUCTION FOR SOUND INSULATION. Gt. Brit. Ministry of Works. 1949. 3p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110267
1. Walls - Insulation - Gt. Brit. 2. Walls, Double - Gt. Brit. 3. Insulation, Sound - Buildings - Gt. Brit. 4. MOW AL 4.

INVESTIGATIONS ON BUILDING FIRES. PART I: ESTIMATION OF THE MAXIMUM TEMPERATURE ATTAINED IN BUILDING FIRES FROM EXAMINATION OF THE DEBRIS, BY T. W. PARKER, AND R. W. NURSE. PART II: VISIBLE CHANGES IN CONCRETE OR MORTAR EXPOSED TO HIGH TEMPERATURES, BY G. E. BESSEY. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1950. 27p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 110264
Part I of this paper deals with the means of estimating the temperatures attained in the fire itself from examination of small pieces of metal, glass and other materials found in the debris after the fire. Part II describes work carried out to determine to what extent observed changes in concrete or mortar exposed to high temperatures were critical and also the temperatures at which they occurred. DSIR NB TP 4.

LAYING SCREEDS AS AN UNDERLAY FOR FLOOR COVERINGS. Gt. Brit. Ministry of Works. 1949. 5p diagrs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110269
1. Floors, Concrete - Insulation - Gt. Brit. 2. Screeds - Gt. Brit. 3. MOW AL 5.

LIMES FOR MORTAR. Gt. Brit. Ministry of Works. 1950. 5p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110268
1. Mortar (Building material) - Lime - Gt. Brit. 2. Lime - Uses - Gt. Brit. 3. MOW AL 6.

MINUTES OF THE SCIENTIFIC RUBBER CONFERENCE OF 31/7/44. ACTIVATORS AND REGULATORS FOR BUNA POLYMERIZATION. I. G. Farbenindustrie A. G., Leverkusen, Ger. Jul 1944. 19f (Text in German) Mi $1.75, Enl Pr $3.75. PB 101329
1. Rubber, Buna - Polymerization aids - Germany 2. Rubber, Buna - Polymerization regulators - Germany 3. KAUTEKO (Anwendungs Technische Kommission für Kautschuk) 4. Micro BIOS DOCS 2578/3306 5. Micro BIOS FD 1390/48, Frames 1-17.
English abstract included.

PAINTING NEW PLASTER AND CEMENT. Gt. Brit. Ministry of Works. 1949. 7p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 110265
1. Plaster - Painting - Gt. Brit. 2. Cements - Painting - Gt. Brit. 3. MOW AL 1.

SOME MECHANICAL PROPERTIES OF FOAMED POLYVINYL FORMAL FOR USE AS AN ELASTIC STABILIZER IN SANDWICH STRUCTURES, by W. J. Pullen. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1945. 8p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 101256
1. Adhesives - Plastic - Canada 2. Sandwich construction - Core materials - Canada 3. Polyvinyl formates - Tests - Canada 4. Formvar (Trade name) 5. Shawinigan Co., Shawinigan Falls, Que 6. ARC RM 2344.
Cover date is 1950. S.O. Code 23-2344.

WORKING PARTY REPORT: BUILDING. Gt. Brit. Ministry of Works. 1950. 95p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 110419
This report covers the organization and efficiency of building operations in Great Britain, including those of the specialist and subcontracting trades; the position of the professions in relation thereto; the type of contract in general use, and recommendations. Appendices present information on the building industry in Sweden and the Netherlands, on costing systems, and on the measurement of productive efficiency. S.O. Code no. 70-617.

TEXTILES AND TEXTILE PRODUCTS

MITTEILUNGEN (REPORTS) REPRINTS OF SCIENTIFIC ARTICLES ON RESEARCH INTO THE PROPERTIES OF SYNTHETIC FIBERS. Textilforschungsanstalt Krefeld

E. V., Crefeld, Ger. 1937-1942. 261f photos, drawings, graphs (Text in German) Mi $9.00, Enl Pr $36.25. PB 101009
1. Fibers, Synthetic - Research - Germany 2. BIOS FR 155 LD 3. Micro BIOS FD 948/47, Frames 1-249.
Abstract available as PB 101009s. 1p. Mi $1.25, Ph $1.25.

SERVICEABILITY OF FABRICS; LITERATURE SURVEY PREPARED by Francis D. Horigan and Cary R. Sage. U. S. Office of the Quartermaster General. Military Planning Division. Research and Development Laboratories, Technical Library. Mar 1950. 54p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.50. PB 110281
1. Fabrics - Abrasion resistance - Bibliography 2. Fabrics - Servicability - Bibliography 3. QMC TL BS 13.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

AXIAL OR LONGITUDINAL VIBRATION OF AN AIRCRAFT, by J. Morris, W. A. Jones and G. F. Walton. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1945. 27p graphs, fold drawings, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 110247
This report gives an analytical solution for the axial or longitudinal vibration of a single-engined aircraft. The solution is applied numerically to a particular fighter for which some experimental observations were available. The treatment is based on the replacement of the continuous mass system by a finite system of discrete masses elastically inter-connected. In the course of the analysis, use is made of the deflection coefficient method in the formulation of the equations of motion and the escalator process in their marshalling and numerical solution. The agreement between the theoretical and the observed results would appear to be satisfactory. Publication date on cover is 1950. ARC RM 2289.

CENTER OF GRAVITY OF A FULLY-LOADED F-86 EJECTION SEAT IN THE EJECTION POSITION, by H.T.E. Hertzberg and Gilbert S. Daniels. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Mar 1950. 6p photos Mi $1.25, Ph $1.25. PB 110133
To determine the center of gravity of the F-86 Ejection Seat in ejection position when loaded with a pilot wearing full flying equipment. AAF TSEAA MR 45341-4-5.

COMPARISON BETWEEN THEORY AND EXPERIMENT FOR WINGS AT SUPERSONIC SPEEDS, by Walter G. Vincenti. U. S. National Advisory Committee for Aeronautics. Jun 1950. 25p photos, diagrs, graphs Mi $2.00, Ph $3.75. PB 110348
A critical comparison is presented between experimental and theoretical results for the aerodynamic characteristics of wings at supersonic flight speeds. After a brief review of supersonic wing theory and of previous results from two-dimensional pressure-distribution tests, an account is given of an NACA study of the force characteristics of three-dimensional wings at supersonic speed. Typical experimental

and theoretical results are presented for the lift, pitching-moment, and drag characteristics of several families of wings of varying plan form and section. The regions of agreement and disagreement between experiment and theory are noted and discussed. NACA TN 2100.

CREEP AND FATIGUE RESISTANCE IN AIRCRAFT CONSTRUCTION. Lilienthal Gesellschaft für Luftfahrtforschung, Berlin. Jan 1939. 57p photos, graphs, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 101334
1. Aircraft - Construction - Germany 2. Airplanes - Materials - Fatigue tests - Germany 3. Creep tests - Germany 4. LG B 106 5. Micro BIOS FD 1263/49, Frames 1-55.
English abstract included.

EFFECT OF A WIND TUNNEL FAN ON IRREGULARITIES IN THE VELOCITY DISTRIBUTION, by J. H. Preston. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1944. 4p diagr Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 101251
1. Wind tunnels - Fan drive systems - Gt. Brit. 2. ARC RM 2307.
Cover date is 1950. S.O. Code no. 23-2307.

EFFECTS OF AMOUNT AND TYPE OF CAMBER ON THE VARIATION WITH MACH NUMBER OF THE AERODYNAMIC CHARACTERISTICS OF A 10-PERCENT-THICK NACA 64A-SERIES AIRFOIL SECTION, by James L. Summers and Stuart L. Treon. U. S. National Advisory Committee for Aeronautics. May 1950. 66p graphs, tables Mi $3.00, Ph $8.75. PB 110235
The effects of variation of amount and type of camber on the variation with Mach number of the aerodynamic characteristics of 10-percent-chord-thick NACA 64A-series airfoil sections are evaluated from tests in the Ames 1- by 3-1/2-foot high-speed wind tunnel at Mach numbers from 0.3 to 0.9 and corresponding Reynolds numbers from 1×10^6 to 2×10^6. Lift, drag, and pitching-moment characteristics were determined for airfoil sections having values of design section lift coefficient of 0 and 0.3, 0.6, and 0.9 with the NACA a=1.0 mean line, and 0.3 and 0.6 with the NACA a=0.4 mean line. NACA TN 2096.

EXPERIMENTAL DETERMINATION OF THE AERODYNAMIC DERIVATIVES FOR FLEUXURAL-AILERON FLUTTER OF B.A.C. WING TYPE 167, by C. Scruton, W. G. Raymer and D. V. Dunsdon. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1945. 15p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.75. PB 101260
More important results are summarized and compared with values obtained by two-dimensional vortex-sheet theory. Cover date is 1950. S.O. Code no. 23-2373. ARC RM 2373.

FAHRMECHANISCHE GRUNDLAGEN ZUR GESTALTUNG DES BUGFAHRWERKS (ROLL-MECHANICAL FOUNDATIONS FOR THE DESIGN OF NOSE-WHEEL LANDING GEAR), by J. Rotta. Focke-Wulf Flugzeugbau G.m.b.H., Aussenwerk, Bad Eilsen, Ger. Aug 1944. 220f diagrs, graphs, tables (Text in German and English) Mi $7.75, Enl Pr $28.75. PB 101030
The design of nose-wheel landing gear is discussed. Good steerability, and reduction of tendency toward a lateral run-away favor a tire with a large width. Determination of the required trail distance is discussed with the conclusion that the trail

distance should be as small as roll characteristics will allow, whereby damping moments for decreasing wheel flutter will be reduced. The simplest construction type and probably best type gear is that with a straight or stub stirrup in which the swivel axis coincides with the spring strut axis. Swivel angle limitation is discussed as to stop-pin and click-stop levers, as to a gear in which the swivel axis does not coincide with the wheel axis. Translated by Lockheed Aircraft Corp., Burbank, Calif. ZWB UM 8006.

FORMULAS AND CHARTS FOR THE SUPERSONIC LIFT AND DRAG OF FLAT SWEPT-BACK WINGS WITH INTERACTING LEADING AND TRAILING EDGES, by Doris Cohen. U. S. National Advisory Committee for Aeronautics. May 1950. 36p diagrs, graphs Mi $2.25, Ph $5.00. PB 110139

The problem is considered of a wing with rectilinear plan form swept so that the Mach lines from the trailing-edge apex intersect the leading edge. By means of approximate formulas developed in NACA TN 1991, 1949 for the lift distribution in such a case, formulas and design charts are presented for the lift on wings of moderate taper, and with tips parallel to the stream, through a practical range of aspect ratios. The charts may also be used to compute the leading-edge thrust and therefore the drag due to lift. NACA TN 2093.

INVESTIGATION OF INTERMITTENT FAULTS IN 30.0-VOLT D-C AIRCRAFT ELECTRICAL SYSTEMS, by Mike Trbovich and Phillip E. Toomire. U. S. Naval Research Laboratory. Apr 1950. 33p photo, diagr, graphs, tables Mi $2.25, Ph $5.00. PB 110438

Faults totaling 2342 were established between conductors in a 30.0-volt d-c aircraft electrical system and a vibrating grounded plate simulating the aircraft structure. In this study approximately 77 percent of the faults established resulted in intermittent type faults. It is shown that the contact resistance at the point of the fault as determined by the area of the contact and the arc resistance, if any, primarily determine the fault current magnitude in a particular system. No correlation was observed between structure vibration and the duration of the first fault pulse. NRL R 3643.

MAXIMUM PITCHING ANGULAR ACCELERATIONS OF AIRPLANES MEASURED IN FLIGHT, by Cloyce E. Matheny. U. S. National Advisory Committee for Aeronautics. May 1950. 19p graphs, tables Mi $1.75, Ph $2.50. PB 110135

Existing flight-test data on pitching angular accelerations have been compiled. The data are for conventional airplanes which had moments of inertia that ranged from 535 to 572,000 slug-feet^2 and for Mach numbers below 0.80. The data were analyzed under certain elementary concepts. Methods are presented for estimating maximum pitching angular accelerations by the use of variables, the values of which are usually available at the design stage of the airplane. NACA TN 2103.

MEASUREMENTS OF TWISTING MOMENT DUE TO AILERON DEFLECTION ON A MODEL MUSTANG WING AT HIGH SPEEDS, by G. F. Hughes. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1946. 10p drawing, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 101259

Tests were made to investigate the variation in the aerodynamic forces with aileron angle at high Mach numbers, the ailerons being moved symmetrically up or down. Cover date is 1950. S.O. Code no. 23-2359. ARC RM 2359.

NEW WHIRLING ARM AT THE NATIONAL PHYSICAL LABORATORY, by A. S. Halliday, P. H. Allwork and H. N. Caborn. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1946. 16p photos, drawings (1 fold) Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.90.
PB 110246

1. Airplanes - Testing equipment - Gt. Brit. 2. Gt. Brit. Dept. of Scientific and Industrial Research. National Physical Laboratory 3. ARC RM 2286.
Publication date on cover is 1949.

NOTE ON THE EFFECT OF DEFORMATION OF A CONTROL FLAP ON LIFT AND HINGE MOMENT, by A. S. Batson and J. H. Warsap. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1944. 7p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40.
PB 110249

1. Flaps, Aircraft - Controls - Deformation - Gt. Brit. 2. Ailerons - Hinge moments - Gt. Brit. 3. Ailerons - Lift - Gt. Brit. 4. ARC RM 2315.
Cover date is 1949.

STRUCTURAL AND AERODYNAMIC EFFECTS OF WING THICKNESS AND FUSELAGE SIZE VARIATION, by A. G. Pugsley, W. Tye and H. J. Allwright. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jan 1940. 10p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50.
PB 110253

1. Wings - Thickness - Gt. Brit. 2. Fuselages - Size - Gt. Brit. 3. ARC RM 2377.
Cover date is 1949.

THEORETICAL LIFT AND DAMPING IN ROLL OF THIN WINGS WITH ARBITRARY SWEEP AND TAPER AT SUPERSONIC SPEEDS; SUPERSONIC LEADING AND TRAILING EDGES, by Sidney M. Harmon and Isabella Jeffreys. U. S. National Advisory Committee for Aeronautics. May 1950. 49p diagrs, graphs, tables Mi $2.50, Ph $6.25.
PB 110353

Generalized expressions are obtained by means of the linearized theory for the surface velocity potential, the surface-pressure distribution, the lift due to angle of attack, and the rolling moment due to steady rolling motion for a series of thin tapered and swept wings. The results are applicable to wings with streamwise tips for a range of supersonic speeds for which the component of the stream velocity normal to the leading and trailing edges is supersonic. Design curves are presented. NACA TN 2114.

ÜBER BISHERIGE ERGEBNISSE AUS FESTIGKEITSVERSUCHEN IM SINNER DER BETRIEBSSTATISTIK. (PRELIMINARY RESULTS FROM FATIGUE TESTS WITH REFERENCE TO OPERATIONAL STATISTICS), by E. Gassner. May 1950. 18p drawings, graphs Mi $1.75, Ph $2.50.
PB 110136

Simple elements were subjected to repeated loads of variable amplitude, chosen in such a way that they may be regarded as approximations to the operational loads (gust and maneuver) experienced by an airplane. The effect of varying some parameters was investigated briefly. Some discussion is given of the question whether a design according to current (1938 German) requirements for static strength is adequate from the fatigue point of view, and existing requirements on fatigue strength are compared. From Lilienthal-Gesellschaft für Luftfahrtforschung. Bericht 106, I. teil, 1939, p. 9-14. NACA TM 1266.

Instruments

INTERFEROMETER CORRECTIONS AND MEASUREMENTS OF LAMINAR BOUNDARY LAYER IN SUPERSONIC STREAM, by Robert E. Blue. U. S. National Advisory Committee for Aeronautics. Jun 1950. 63p photos, graphs Mi $3.00, Ph 8.75. PB 110349

The laminar boundary layer on a flat plate in supersonic stream was investigated by means of a Zehnder-Mach interferometer and a total-pressure probe. The density gradient in boundary layer on the plate necessitated consideration of the effect of light refraction on interference data. Density and velocity distributions, compared favorably with laminar boundary-layer theory. Skin-friction coefficients calculated from boundary-layer profiles were larger than predicted by theory. NACA TN 2110.

INTERPRETATION OF AZIMUTH INDICATORS BY NOVICES. I. AIRCRAFT DIRECTION INDICATORS WITH FIXED LUBBER LINES AND AZIMUTH CARDS THAT TURN, by Roger Brown Loucks. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Cct 1949. 26p photos, tables Mi $2.00, Ph $3.75. PB 110279

A series of experiments were carried out to compare rotating pointer and rotating card (stationary pointer) azimuth indicators in terms of the ease of interpretation by novices. Several instruments of each type were evaluated in an azimuth ground trainer which provided error and response time records. The rotating scale instruments, in general, produced more turns in the wrong direction which were not corrected; an effect attributed to the incomplete exposure of the scale on this type of instrument. On the other hand, a simple moving pointer indicator was responded to with more starts in the scale instrument. These initial errors on the moving pointer instrument were attributed to the relation between rudder pedal motion and the resulting direction of turn, which appeared to be unnatural to the novices. This report was prepared by the Department of Psychology of the University of Washington, Seattle, Washington, under USAF Air Materiel Command contract no. W33-038-ac-15230. AAF TR 5957.

Engines and Propellers

APPLICATION OF THEODORSEN'S THEORY TO PROPELLER DESIGN, by John L. Crigler. U. S. National Advisory Committee for Aeronautics. 1949. 19p graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 110272

A theoretical analysis is presented for obtaining by use of Theodorsen's propeller theory the load distribution along a propeller radius to give the optimum propeller efficiency for any design condition. The efficiencies realized by designing for the optimum load distribution are given in graphs, and the optimum efficiency for any design condition may be read directly from the graph without any laborious calculations. Examples are included to illustrate the method of obtaining the optimum load distributions for both single-rotating and dual-rotating propellers. NACA 924.

CORRELATION OF CYLINDER-HEAD TEMPERATURES AND COOLANT HEAT REJECTIONS OF A MULTICYLINDER, LIQUID-COOLED ENGINE OF 1710-CUBIC-INCH DISPLACEMENT, by Bruce T. Lundin, John H. Povolny and Louis J. Chelko. 1949. 24p graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 110134

Data obtained from an extensive investigation of the cooling characteristics of four multicylinder, liquid-cooled engines have been analyzed and a correlation of both the cylinder-head temperatures and the coolant heat rejections with the primary engine and coolant variables was obtained. NACA 931.

DESIGN MANUAL FOR DETERMINING THE THERMAL CHARACTERISTICS OF HIGH SPEED AIRCRAFT, by H. A. Johnson, M. W. Rubesin, F. M. Sauer, E. G. Slack and L. Possner. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Sep 1947. 175f graphs, tables Mi $6.50, Enl Pr $22.50. PB 101314

1. Heating, Aerodynamic 2. Engines, Aircraft - Thermodynamics 3. California. University. Dept. of Mechanical Engineering 4. AAF TR 5632 5. AAF TSEAC 12-4625-2-1T.

Reprint of a report written by Engineering Research Projects, Department of Mechanical Engineering, University of California, Berkley 4, California. AAF Contract W33-038-AC-15229.

DEVELOPMENT AND APPLICATION OF HIGH-CRITICAL-SPEED NOSE INLETS, by Donald D. Baals, Norman F. Smith and John B. Wright. U. S. National Advisory Committee for Aeronautics. 1948. 59p drawings, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.35. PB 110344

The data have been arranged in the form of design charts from which NACA 1-series nose-inlets proportions can be selected for given values of critical Mach number and airflow quantity. Examples of nose-inlet selections are presented for a typical jet-propulsion installation and for two conventional radial-engine installations. The possibility of application of the NACA 1-series ordinates to the experimental development of wing inlets is also indicated. NACA 920.

DREHKLANG VON LUFTSCHRAUBEN (ROTATIONAL SOUND OF AIRSCREWS), by Merbt. Aerodynamische Versuchsanstalt, Göttingen, Ger. Oct 1944. 30f graphs (Text in German and English) Mi $2.00, Enl Pr $5.00. PB 101031

Kuessner's theory dealing with propeller sound is discussed. The validity range of the approximation formula given by Kuessner is investigated, and, by means of a method based on comparison with Ernsthausen's measurements, a semi-experimental procedure is devised for determination of the constants and parameters involved. Approximate calculations are given for the sound field of the four-engine B-17F bomber. These calculations deal with the field in direct proximity of the airplane. Translated by Lockheed Aircraft Co., Burbank, Calif. ZWB UM 3208.

DYNAMICS OF A TURBOJET ENGINE CONSIDERED AS A QUASI-STATIC SYSTEM, by Edward W. Otto and Burt L. Taylor, III. U. S. National Advisory Committee for Aeronautics. May 1950. 35p drawing, graphs Mi $2.25, Ph $5.00. PB 110146

A determination of dynamic characteristics of typical turbojet engine with centrifugal compressor, sonic-flow turbine-nozzle diaphragm, and fixed-area exhaust nozzle is presented. A generalized equation for transient behavior of the engine was developed; this equation was then verified by calculations using compressor- and turbine-performance charts extrapolated from equilibrium operating data and by experimental data obtained from an engine operated under transients in fuel flow. The results indicate that a linear differential equation for engine acceleration as a function of fuel flow and engine speed for operation near a steady-state operating condition can be written. NACA TN 2091.

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